



FRIDAY, SEPTEMBER 5.

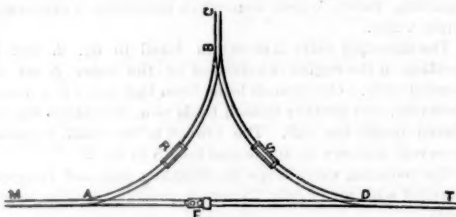
Contributions.

W. C. I.'s Switching Problem.

TAUNTON, Mass., Aug. 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Please give me your attention whilst I attempt the solution of the "Terrific" railroad problem by "W. C. I." C., C. & I. Ry. (the initials are enough to scare any novice, "but faint heart never won fair lady.") Let train from B run on to turnout at D, and push empty cars on to main track in front of train standing at A. Let engine of the B train uncouple, and leave its train on turn out, then run on to main line and back past switch D. Train A then starts up, pushing empties until its own train is between switches and uncouples, runs past switch, and then backs into turnout, and pushes train B on main line towards A. It then returns to the head of its own train, and couples. The engine of train from B pushes empties into turnout, and stands until train from A has passed beyond switch, then leaving empties goes to rear of train from B, and couples on, then pulls train into turnout, pushing empties on main track in



rear of train from A, uncouples from rear of train, and runs around and couples to the front end of train, and draws out on main track. Train from A then backs up, and pushes empties into turnout, and each engine can proceed on its respective journey, and neither has been "turned round," as "A. T." would say.

G. E. J.

SUNBURY, Pa., Aug. 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the last issue of the *Gazette*, I see that "W. C. I." C., C. & I. R., asks the solution of the following problem:

Two opposing trains of 35 cars each are to pass at a point where there is a "35 car and engine" siding which is already occupied by 35 empty cars not shackled, (coupled, I suppose, is meant), the conditions being that the cars must not be shackled during the process.

I would suggest this manner of doing it:

1st. Uncouple the engine from train A, leaving the train so as to clear 35 cars and an engine from switch C; run engine along main track to switch D and back in against the empties, clearing main track.

2d. Run engine and train from B along main track to A and couple engine to train A.

3d. Back into siding, pulling train A and pushing train B until you touch the 35 empty cars. Keep on pushing until you have train A on the siding clear of main track.

4th. Cut loose from train A and back train B and the 35 empties out on main track clear of switch D. Engine A will have in the meantime run out on the main track ahead of the empty cars.

5th. Run train B along main track until it clears the switch C by 35 car lengths.

6th. Back engine A (which has been standing at B) against empties, and push them along main track until they clear switch C (and are against train B).

7th. Run engine A along main track and back into siding at switch D, couple to train A standing there, and proceed on the trip.

8th. Back train B against the 35 empties, pushing them into the siding at switch C until they clear, and then engine and train B can go ahead, leaving the 35 cars in their original position, and during the operation they have not been shackled.

G. W. C.

Pennsylvania Railroad, Philadelphia & Erie Division.

HUDSON, N. Y., Aug. 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Allow me to offer a solution of the problem offered by "W. C. I." in the *Gazette* of the 22d inst.:

The east-bound train stops some distance west of C. The west-bound train takes the siding, pushing the empties ahead of it out on the main track. The engine of the latter train then uncouples and backs down main track, stopping over a train length east of D. The east-bound train then goes ahead, kicking the empties in the direction of B, and stops between C and D. The engine of west bound train pushes the empties back into the siding, and its own train ahead of them out on main track. (It may be necessary to use a stake in order to leave switch C clear, as the empties are uncoupled, but this "W. C. I." does not forbid.) Then the east-bound train couples to the rear of west-bound train, pulling it clear of switch D, leaves it there and goes ahead. The engine of west-bound train can then back to its train

and go ahead, leaving the empties where they were in the beginning.

This is the hardest yet, and I confess does not give me a chance to beat the record of your Chicago correspondent.

W. W. TURLAY.

CLEVELAND, O., Aug. 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

"W. C. I.'s" problem in your issue of Aug. 23 may be solved as follows:

Let, say, east-bound train stop just before reaching siding, uncouple engine and run it on to siding (which will hold 35 cars and engine). Now let west-bound train couple to east-bound train and draw it along main track till just opposite siding, and leave it there, then west-bound train is to enter siding and push train of empties and engine out on main track, leaving siding clear, when west-bound train is to back down and push east-bound train along main line until east-bound train engine can push empties back on siding, which it will also take; when west-bound train can resume its journey, hauling east-bound train with it until its engine can leave siding in front of the train, when it can couple up and go ahead.

This does not cut the trains in two, "or turn engine around."

C. F. LEWIS.

PHILADELPHIA, Pa., Aug. 24, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The problem of "W. C. I." C., C. & I. R., of Aug. 22, may be answered as follows:

Run No. 1 train (moving from B to A) into siding, and push empty cars out at C, and up to No. 2 train (moving from A to B). Back No. 1 train on main track between switches, and back engine of No. 1 train through siding and down to B.

Run No. 2 train with empty cars ahead through siding and up to B, and back No. 2 train to No. 1 train and push it beyond switch at C. Run No. 2 in siding, and back empty cars with No. 1 engine on main track between switches; let No. 2 proceed out of siding at D, and run No. 1 engine through and out of siding at C, and couple up on back end of No. 1 train and run towards B, pushing empty cars in advance, and also leaving its own (No. 1 train) between switches of siding on main tracks, and run No. 1 engine through siding and out at C, and couple on to its own train and proceed on its journey.

Let No. 2 train back and push the empty cars in siding at D and also proceed on its journey.

As will be seen, the empties have not been shackled.

CHAS. F. BAURBURST.

No. 2,850 North 11th Street, Philadelphia, Pa.

"A. T.'s" Switching Problem.

KANSAS CITY, Mo., Aug. 18, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am anxious to know if there is a shorter method than mine in solving "A. T.'s" problem in your issue of the 15th. A pulls through, uncouples, leaving "tail end" on siding, and backs down to first position.

B heads in, couples to A's tail end and backs up main track.

A heads in and B pulls by.

A pulls out and up main track clear.

B backs through, leaving A's tail end on siding, and backs by the switch, if grade is heavy, and kicks A's tail end on siding, making the first cut, and proceeds on his way, A backing down, making his first coupling, and doing like wise.

B's train has remained intact.

A and B have each made one cut and one coupling.

The east switch has been thrown down and up three times; the west switch four.

Time, not more than six minutes.

H. D. P.,

Union Pacific R. R.

[In answer to "H. D. P." we may say that though there is a quicker method of solving this problem, we do not believe that under the circumstances two such freight trains could pass one another in less than six minutes. There are two main solutions to this problem, in one the engine and 30 cars go on the siding, and leave the tail end of the train on the main line. This involves a total amount of switching equal to the length of 300 cars, not counting the length of engine or caboose. This method is used by "Hip Sing," and we presume has been the general railroad practice in China for many thousand years.

The other method is that used by "H. D. P.," where the tail end of the train is left on the siding. The amount of switching involved is equal to the length of 540 cars. Reckoning the stowage length of an average freight car at 32 ft., the total amount of switching by this method would be $3\frac{1}{2}$ miles. As no allowance is made for length of engine or caboose, or distance from clearance point to point of switch, the real distance would be little short of four miles. The work is, of course, divided between two engines, but as one has often to stand while the other is moving, and 60 and 90 car trains are somewhat sluggish to start, it would appear that "H. D. P.'s" sanguine estimate of six minutes would probably be swollen to half an hour.

We have also received answers from J. F. Carr,

Columbus, O.; Arthur B. Warfield, Chicago, Ill.; and Wm. T. Denniston, Pittsburgh, Pa. "J. H.," Montreal, sends a solution in which both engines are detached from their trains. This involves 490 car lengths of switching.—[EDITOR RAILROAD GAZETTE.]

SCRANTON, Pa., Aug. 25, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The following is my solution of the problem appearing in your issue of Aug. 22:

Taking A as the West, and B as the East, the west-bound train goes in on siding pushing empty cars before it. Engine leaves its own train on siding and pushes empty cars to A on main track, and then runs them up to main track near B (leaving empty cars at A). East-bound engine pushes empty cars up main track past D, leaving its own train in C D on main track, and then goes in on siding and shoves west-bound train to A on main track, and leaving it there returns to D in C D. West-bound engine pushes empty cars in siding, leaving them in original position. East-bound train backs up and couples on west-bound train and pulls by siding, when west-bound engine backs out of siding and couples on its own train.

FRANK G. WOLFE,

Delaware, Lackawanna & Western R. R.
GUAYMAS, Sonora, Mexico, Aug. 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

"A. T.," of C. & A. R. R., evidently has never "railroaded" in the West, where, ten years ago, there were very few sidings with "two ends," and fewer that would hold "full trains," or he wouldn't ask you to publish as a "problem" a question which any brakeman west of the Missouri River can answer, that is, how to "saw by."

"KNOWS GRIEF."

The Union Pacific and the Government.

Every few days articles appear in the papers of this country upon some phase of the Union Pacific's affairs, usually in its relations to the government, which contain so many errors that to the average mind the whole matter has become a jumble of law, history and accounts. To make a clear and simple statement of the facts, therefore, the *Advertiser* has sought information from official reports and records and from gentlemen whose relations to the government and to the company qualify them to answer correctly, and with the knowledge thus gained the situation is stated as concisely as possible.

Testimony is now being taken, and is nearly closed, in the three suits that are pending before the United States Court of Claims, and which are set for trial Nov. 24. Contrary to certain loose statements that have recently appeared, the government makes no claim for \$52,000,000 or any other extravagant sum, but only for what has accrued under the charters and the Thurman Act, as will be stated below. The company claims that it owes nothing to the government, and, on the contrary, that in the current account the government owes the company a large amount. Let us see how this is:

The Union Pacific Railway Co., through its constituent companies (the Union Pacific Railroad Co. and the Kansas Pacific Railway Co.) received from the United States subsidy bonds, which will mature about 1898, to the amount of \$33,539,512.

Originally the government was authorized to retain, and apply on this indebtedness and the interest thereon, one-half of the compensation earned by the company in the transportation of government property, troops, stores, mails, etc., and to pay the remaining one-half to the company. In addition to the one-half compensation thus retained by the government, the company was also required to pay 5 per cent. of its net earnings. A question arose early whether or not the company must pay semi-annually the interest on these bonds. The Supreme Court decided (91 U. S. 72), the opinion being given by Mr. Justice Davis, that "it was not the intention of Congress to require the company to pay the interest before the maturity of the principal of the bonds." Therefore no interest is due the government or will be for about 14 years.

July 1, 1878, the Thurman act became operative. That act imposed additional obligations on the Union Pacific, but made no change in respect of the requirements on the part of the Kansas Pacific. As to the Union Pacific, the act directed that the whole amount of compensation that might from time to time become due to the company for services rendered for the government should be retained by the United States, one-half thereof to be applied to the liquidation of interest paid and to be paid by the United States upon the subsidy bonds, and the other half to be turned into a sinking fund, which was created at the time of the passage of the act. In addition to this whole compensation thus to be retained, the company was required to pay in, each year, to the credit of the sinking fund, \$850,000, or so much thereof as, added to the whole compensation, would aggregate 25 per centum of the net earnings of the company for the preceding year.

This act was approved May 7, 1878. At the October term of the Supreme Court following its validity was established, Chief Justice Waite expressly holding that it was proper for the government, in its twofold capacity of creditor and sovereign, to require the company to be prepared to meet its indebtedness when it should mature, but that this is rather a payment to the company (to its sinking fund) than to the government, and that its effect must be to enhance the company's credit and the value of its stock and bonds. This decision is reported in 99 U. S., page 700.

Under this act, so far as the old Union Pacific Railroad is concerned, and under the original acts of 1862 and 1864, so far as the Kansas Pacific Railway is concerned, the accounting officers of the government have from time to time stated their accounts against the company.

On Dec. 31, 1883, the balance claimed by the government to be due from the railroad company was \$2,446,557. This amount included the amount of the demand for the year 1883, which, it will be borne in mind, was met and liquidated by the railroad company, payment thereof having been made to the Assistant Treasurer of the United States in Boston, in the month of June last. The amount paid by the company at this time was \$718,814. This payment narrowed the controversy, so far as the claims of the government were concerned, to the period prior to Dec. 31, 1882, when, in its view, the balance still due from the company was \$1,727,743.

On the other hand, the company claims that the payment made by it on July 26, 1881, in settlement of its account to Dec. 31, 1880, had not been taken into consideration by the United States, viz., \$69,358. It also claims that its reason-

able expenditures for station buildings, shops, tools, machinery, locomotives, cars, etc., are proper charges against the gross earnings of the company in order to ascertain the net earnings. The amount in controversy as to these expenditures is \$741,542. The company also contends that the demand of the government for the year 1882 is erroneous, in that it exceeded the maximum amount authorized in the Thurman act by the sum of \$249,346. If, therefore, the company is wholly right as to its claim covering the deposit

items, concerning which, however, there is not the slightest disagreement, and touching which the only object in introducing them on either side has been, and is, to use them as offsets, so far as may be, and to have them included in a final settlement. These claims, as well as those in controversy, are now embraced within the pending suits.

In reference to the claim of the company for increased postal compensation, it may be said that the claim for a portion of the period has already been passed upon by the

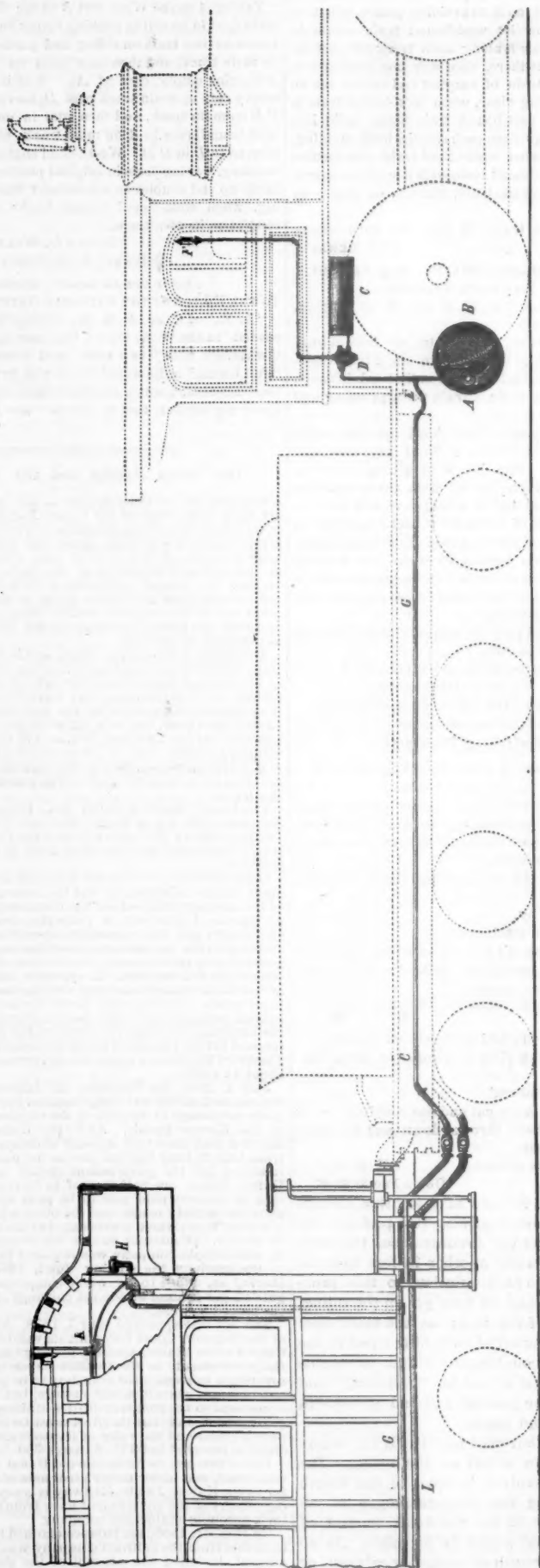


Fig. 1. General View.
THE WESTINGHOUSE TRAIN SIGNAL APPARATUS.

The Westinghouse Train Signal Apparatus.

The accompanying illustrations represent a method of signalling between the engineer and the conductor or brakemen of a train, which has been introduced by the Westinghouse Air-Brake Company as a substitute for the bell cord. This form of train signal has been adopted by the Pennsylvania Railroad after a long practical test, and it is now being fitted to all its main-line trains.

The signals are actuated by compressed air conveyed in pipes, which are distinct from those used for the brake. In earlier forms of the apparatus, the signals were given by minute differences of pressure in the brake pipe, and no separate line of connections were used for signaling. It is evidently a matter of great difficulty to make a signal pipe answer for both purposes. The alterations of pressure which actuate the signaling devices must be so small that the brakes will have no tendency to go on, and at the same time the signaling apparatus must be unaffected by the varying pressures maintained in the brake pipe by the air pump on the engine. These difficulties are got rid of by using two distinct lines of pipes and rendering the brake and train signaling apparatus completely independent of one another, except that both derive their supply of compressed air from the same air pump.

The air for working the train signaling apparatus passes from the main reservoir on the engine through a reducing valve to the signaling pipe, which runs throughout the train.

The reducing valve is shown in detail in fig. 3, and its position is indicated by the letter A in the general view, fig. 1. The signaling pipe terminates on the engine in a signaling valve, which somewhat resembles a diaphragm triple valve.

The signaling valve is shown in detail in fig. 2, and its position on the engine is indicated by the letter D on the general view. One branch leads from this valve to a small reservoir, and another branch leads to a miniature whistle placed inside the cab. The branch to the small signaling reservoir is shown by the dotted lines 5 in fig. 2.

The reducing valve keeps the signaling pipe and reservoir charged with air of only 15 pounds pressure to the square inch.

The upper side of a diaphragm 10 in the signaling valve on the engine is in communication with the train pipe, while the lower side is in communication with the small reservoir, and seats a valve 5, closing the orifice leading to the whistle. When, therefore, the pressure in the train pipe is

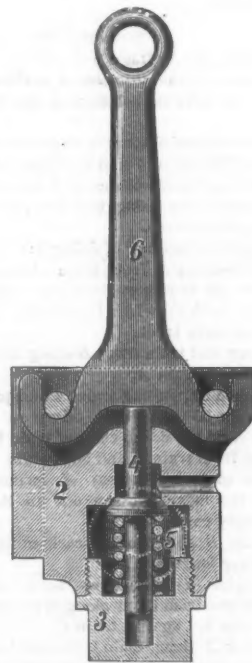


Fig. 4. Car Signal Valve.

THE WESTINGHOUSE TRAIN SIGNAL APPARATUS.

reduced, the excess of pressure on the under side causes the diaphragm to rise and open a communication between the reservoir and the whistle, when the latter is sounded by the rush of the compressed air.

A valve permitting the escape of air is fixed in the saloon of each car. This valve is shown in detail on fig. 4, and its position on the car is indicated by the letter H in the general view. The bell cord is attached to the eye of the vertical lever 6, which is so pivoted that it will release air from the train signal pipe, when the bell cord is pulled in either direction. As before explained the release of air and consequent decrease of pressure sounds a whistle in the cab.

It will be seen that the arrangement resembles the automatic air brake with the position of the different parts reversed. Only one triple valve and one auxiliary reservoir are used, and they are situated on the engine; while each car is fitted with a valve by which the air can be let out and the whistle sounded.

The bell cord can also be connected to the bell cord of another car should that car not be fitted with the train-signaling arrangement.

The hose pipes are identical with those used for the brake, but the iron pipes are smaller, while the couplings are on

of July, 1881, and in its contention as to the true mode of ascertaining the net earnings, and as to its maximum requirement under the law, it is entitled to credit for \$1,060,237. This would leave the balance due to the government on Dec. 31, 1883, \$667,504.

Against this claim of the government the company had a claim against the United States for transporting the mails, in excess of the amount allowed by the Post Office Department, which, on Dec. 31, 1883, amounted to \$4,360,496.

These are the claims of the parties which are in dispute. The claims of the respective parties include many other

Supreme Court. That Court sustained the principle contended for by the company in this respect, although it was not then prepared to say, from the facts before it, that the rate charged by the company was "fair and reasonable," which the charter act required that it should be. The Supreme Court remanded the case to the Court of Claims, with instructions to have other matters in connection with the service rendered by the company on its passenger trains taken into consideration, and it is in reference to these matters, very largely, that the testimony is now being taken.—*Boston Advertiser.*

the same principle, but are made with a much thicker lip, so that a mistake cannot be made in coupling the train signal pipe of one car with the brake pipe of the next. Those

year. There are now about 400 or 500 white men and 3,000 Chinamen at work on this division of the Canadian Pacific. The cantilever bridge over the Fraser River is completed, and is said to be a splendid piece of work.

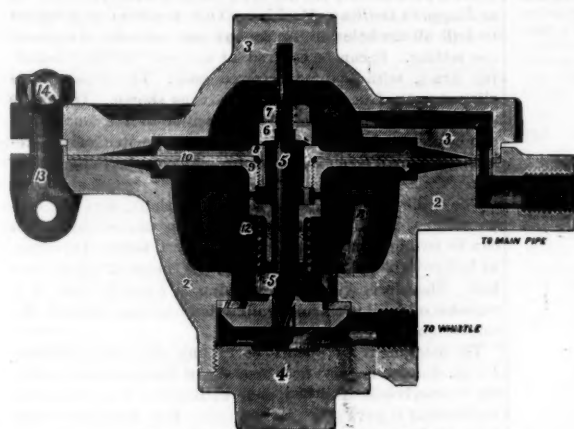


Fig. 2 Signalling Valve (on Engine.)

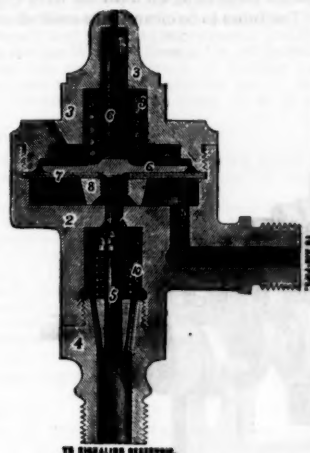


Fig. 3 Reducing Valve.

THE WESTINGHOUSE TRAIN SIGNAL APPARATUS.

pipes which are too much worn to stand the pressure usual with the automatic brake can be used for the train signaling apparatus, which is never subjected to a pressure exceeding one atmosphere, or 15 lbs. to the square inch.

Railroad Work in Oregon.

A correspondent of the St. Paul Pioneer-Press sends the following notes on railroad work from Portland, Oregon, under date of Aug. 21:

OREGON SHORT LINE.

Work on the Oregon Railway & Navigation Co.'s extension, known as the Baker City Branch, is progressing as rapidly and favorably as could be expected under the circumstances. The railroad is being extended eastward from Baker City, Oregon, to a junction with the Oregon Short Line. Grading along the entire line to Huntington, on the Snake River, will be completed by Aug. 25. Tracklaying is finished to a point four miles east of Powder River, within 16 miles of Baker City, and will probably reach that point by the end of August. Rails are being laid at the rate of 6,000 ft. per day. Between Baker City and Huntington the distance is 50 miles, and it is expected to reach the latter point by Oct. 1. The water in Snake River having reached a

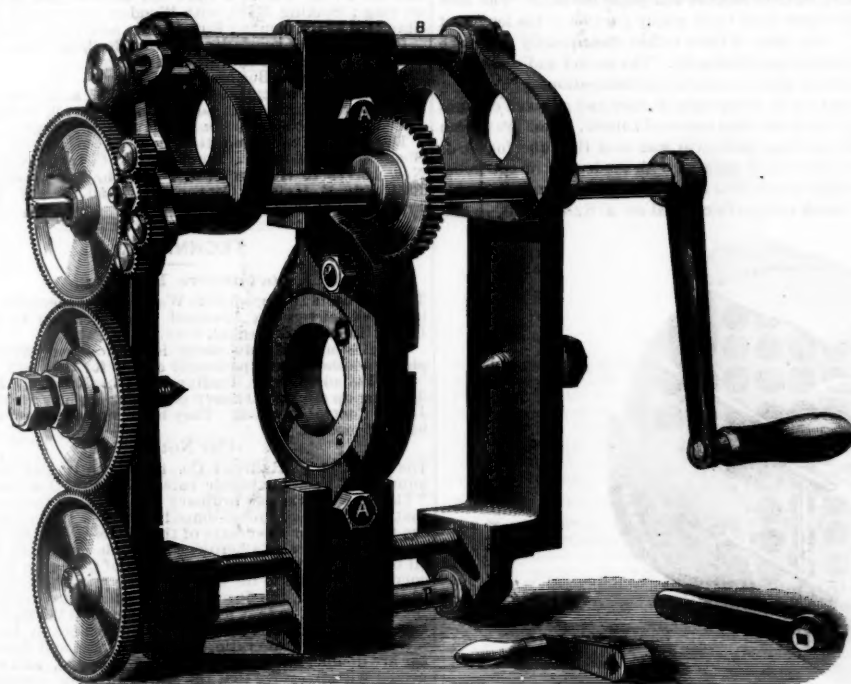
Spence's Bridge, it is thought, will be the distributing point next winter for Cariboo and other up-country towns. Work has not yet been begun on the section beyond Savona, and it is not yet known when commencement will be made. Below Yale the ballasting and filling is being carried on. The road is represented as being in good condition.

PORTLAND-KALAMA BRANCH.

Gen. Anderson, Chief Engineer of the Northern Pacific, has been urging more rapid work in ballasting the road between Portland and Kalama. The distance between these points is about 40 miles, and it is the only uncompleted link now that prevents Tacoma from having uninterrupted rail communication with the East. The work of ballasting this section of the road has been in progress some time and it is almost completed. The date, however, of the formal opening has not yet been announced. The new mammoth ferry boat "Tacoma," which will be used in making the transfer of passengers and freight across the Columbia River between Kalama and the west side, is about completed, having made the trial trip some days ago. It is thought that everything will be in readiness for regular trains to commence running by Aug. 20. When this is done Tacoma will be placed in direct rail communication with the East.

OREGON PACIFIC RAILROAD.

Work on the Western Division of the Oregon Pacific Railroad is being crowded forward quite rapidly. This road



PATENT PORTABLE WRIST-PIN LATHE.

low enough stage, the Oregon Short Line is moving all available forces back, and will commence work on the bridge at once. All the necessary supplies and materials, including iron, are in readiness for the bridge. The work would have been advanced and out of danger from high water but for some stone used in the foundation which was found to be bad. This discovery, of necessity, delayed the work until after the usual early summer freshet. It is the expectation of the company to have the bridge completed soon, and the two miles of track on the west side of Snake River laid to connect with the Oregon Railway & Navigation Co.'s road. By the middle of November it is expected to have the junction effected. When this is accomplished, Portland will have direct communication with the East by this new line.

CANADIAN PACIFIC RAILROAD.

On the Rocky Mountain Division of the Canadian Pacific there are now 4,000 men employed, and the track has been laid and completed for 45 miles west of the summit of the Rocky Mountain range. At this end work is being pushed quite rapidly. The rails are now laid to Sawmill Flats, about 7 miles beyond Lytton. For a distance of 25 miles beyond Spence's bridge the road is graded, but the bridges have not yet been built, and there is a tunnel in the Black Cañon which will not be completed for about three months. The contractor confidently expects to have the road completed and trains running to Spence's Bridge by the end of September, and to Savona about the same time, this

commences at the town of Corvallis, in Benton County, Or., and extends to the Pacific Ocean, striking the sea coast at Yaquina Bay. The total distance is 72 miles. The time fixed for the completion of this road is Oct. 20, 1884. Unless the road is completed and in operation by that date, the company's land grant will be declared forfeited. From Corvallis, extending west, the road has been graded for more than 15 miles. The rails have not been laid for that distance, but the ties are all cut and distributed, and the iron is all ready. Work has also been commenced at Yaquina Bay, and is being pushed eastward. Twelve miles of track have been laid, extending from tide-water toward Corvallis. Tracklaying is progressing at the rate of nearly a mile per day. About 500 men are employed at present. There are a large number of Chinamen who will probably commence work in a few days. The road has been graded from the bay eastward as far as Pioneer, 25 miles. On the summit, there are five miles of grading completed. This is the heaviest work required to be done on the whole line. There are three or four tunnels completed and several trestle bridges. But little more grading is now required to be done. The company express a determination to crowd this important line through to completion in the time allowed. This will afford ample time to transport this season's grain from the Willamette Valley to tidewater. At Yaquina Bay, the Oregon Pacific Railroad Co. has built several large saw-mills, an extensive wharf and car shop. At these works a number of cars are being turned out.

OREGON & CALIFORNIA.

Some time ago, by order from headquarters in New York, all operations on the Oregon & California Railroad extension were suspended. The road is now completed and in operation as far as the town of Ashland. This point is about 341 miles south of Portland, near the southern boundary of Oregon. No trains are running south of Ashland, although the road is nearly completed for 80 miles beyond that point. When orders were received to suspend all operations, the work was well in hand for that distance and, with the force of men employed, would have soon been in operating condition. Work on the longest tunnel on the route—6,000 ft. long—was progressing rapidly when the contractors were instructed to close down. Henry Villard, President of the Oregon & California Railroad Co., went to Europe some time ago for the purpose of conferring with the German bondholders of this road. What conclusion was arrived at with regard to the prosecution of the work of extension is not known at present. Mr. R. Kochler, Manager of this road, left here a few days since for the purpose of meeting Mr. Villard in New York. These gentlemen are now in consultation in New York. Every indication points to the fact that operations will not be resumed—at least for a long time. The object of the extension is to effect a junction with the California & Oregon Railroad (owned and operated by the Central Pacific), which has been continued some distance north of Redding, in California. A gap of 186 miles now separates these two points of road, which is traversed by passengers and mails in stage coaches. Operations were suspended a short time ago at the other end, the same as at this, by order of the Central Pacific Railroad Co. The latter corporation have, it seems, about concluded to discontinue work. Charles Crocker, Vice-President of the Central Pacific, was in Portland a few days ago, and interviewed by a Pioneer-Press correspondent. Answering an inquiry relative to the future of the Oregon Extension, Mr. Crocker said he did not feel like building another mile of railroads in California until the people expressed more willingness to have them built. The line, he said, would probably be extended to connect with the Oregon & California extension near the state line, but not in the immediate future.

Delta Metal.

This new metal is an alloy of copper, zinc and iron, and is reported to be equal to mild steel in strength, durability and toughness. In color it resembles gold. The following are some of its qualities as claimed by its inventor and manufacturer (Mr. Dick):

Delta metal can be forged and rolled hot, and when so treated is 50 per cent. stronger than wrought iron. In its molten state it runs freely, and sound, close-grained castings can be produced from it. When cold it may be rolled into the thinnest of sheets, or drawn into the finest wire, its tensile strength in the latter form being nearly three times that of the best wrought iron. It is adapted for all kinds of cylinders, cocks, valves and other steam fittings; being grainless, it is easily manipulated by any cutting tool, will take a high polish, and does not tarnish or corrode.

Its quality of non-corrosion renders it specially suitable for feed-pump rods, linings, buckets, valves, rams, studs and bolts, or anything exposed to the action of fresh water or corrosive action.

A great future appears to be open to this metal, its elasticity and toughness making it less liable to damage by indenting than other metals; and its power of resisting corrosive action, combined with its lesser required thickness for the same strength, points to its special adaptation for purposes where the transmission of either heat or cold—as in stills, refrigerators, fresh water or surface condensers, land and marine boilers, etc.—is a desideratum.

Outside the more direct uses to which this metal may be put by the mechanical, marine, hot water, gas, or electric engineer, or shipbuilder, its possible applications are truly "legion" in number, as there is hardly anything made of metal, either inside or outside our factories, shops, offices, or houses, or in our streets, which may not be fashioned out of it.

From the results of experiments made to ascertain the comparative tensile strengths of Delta metal, brass, and gun metal:

Delta metal, cast in sand (green), showed a breaking strain of..... 48,000 lbs. per sq. in. Ditto, rolled hard (1 1/4 in. diameter bar)..... 75,000 lbs. "

Other tests made in Germany at the instance of the makers of Delta metal are stated to have given the following results: In tension the electric limit was reached at a strain per square inch of 31,575 lbs.; the commencement of permanent set per square inch was 49,757 lbs.; the breaking strain per square inch was 80,858 lbs.; the elongation was 12.9 per cent., and contraction of area of fracture 17.4 per cent. The crushing test, by a stress of 22,000 lbs., gave a compression of 0.80 per cent.; 44,000 lbs., 1.53 per cent.; 66,000 lbs., 2.03 per cent.; 77,000 lbs., 2.71 per cent.; 88,000 lbs., 3.87 per cent.; 99,000 lbs., 5.77 per cent.; 110,000 lbs., 8.20 per cent.; 121,000 lbs., 10.76 per cent., and 132,000 lbs., 13.41 per cent. The ultimate stress per square inch was 135,700 lbs.

Some bearings have been recently stamped from this metal for one of the great English railroads. They are struck at a dull red heat and come out, it is said, with fine sharp edges, ready for immediate use, and are free from blow-holes and flaws, and possess the strength of Bessemer steel.

Improved Machines for Repairing Locomotives.

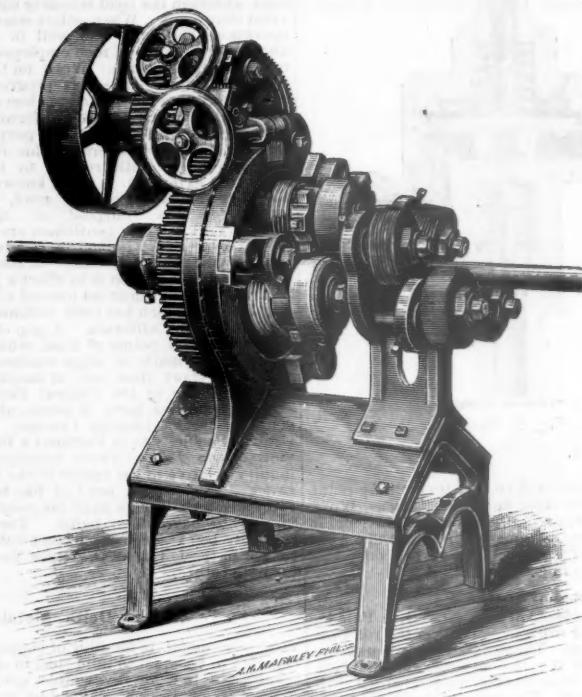
Messrs. L. B. Flanders & Co., of Philadelphia, have lately devised some new patterns of tools for locomotive repairs. Among them is a small lathe for turning wrist-pins when cast or forged solid in locomotive cross-heads. It is difficult to make these pins both perfectly round and exactly in line. The accompanying illustration shows an improved form of lathe for this purpose. The machine is easily set, the centres being screwed into centre marks previously made on the outer sides of the cross-head exactly in line with the required centre of the pin. The machine is then in a position ready for work. The centre portion is divided vertically into two parts, so that it can be placed so as to encircle the wrist-pin. The two parts are joined with two bolts, the heads of which can be seen in the illustration. The cutters (one on each side) are held in dovetail grooves by set screws. The ring containing the two cutters has teeth cut on its outer periphery, and is made to revolve by means which will be easily understood from the drawing. The centre portion of the tool slides on two circular bolts BB, which brace the outer portions together. The traverse or sliding feed is given by two feed-screws, coupled together by gearing as shown. As first made, but one feed-screw was used,

and the sliding or centre portion had therefore a tendency to cant and jam upon the guiding bolts. The two feed-screws can be thrown out of gear when it is desired to finish the fillets at the ends of the pin, and any desired feed can be given by hand.

This machine is made in different sizes to suit varying

thicker than usual. The rollers can also yield to a bent or tapered tube, which can thus be cleaned as perfectly as one that is straight and parallel. When the rollers spring over a bad place, the machine can be reversed, and the tube passed through again until the hard spot is removed.

The tubes to be cleaned are entered one by one on the left-



OTTO'S TUBE CLEANING MACHINE.

patterns of cross-heads, but the standard size machine will take the majority of cross-heads.

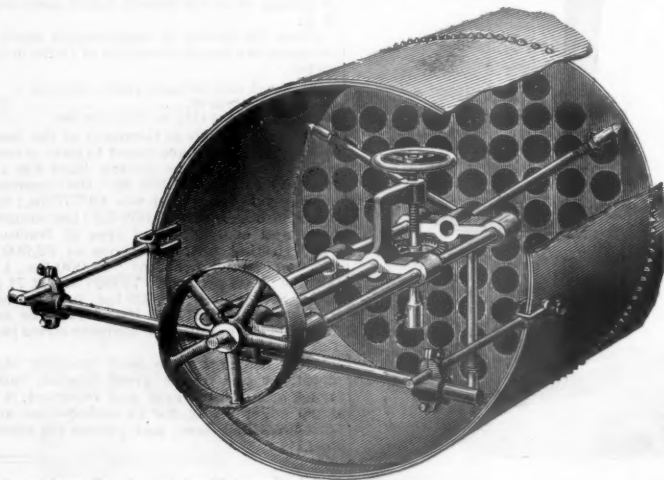
Otto's patent flue-cleaning machine is a contrivance of novel and ingenious design for removing the incrustation and scale from the outer surface of locomotive flues. The first machine made on this principle was exhibited at the Chicago Exposition of Railway Appliances, and the construction has since been improved by Messrs. Flanders, after a careful series of tests in cleaning incrustated flues.

The machine possesses several advantages over the revolving rumbler generally used for the same purpose. It takes up far less space, makes no noise and very little dust, and therefore can be placed inside a repair shop, and has not to be relegated to some outside lean-to as an objectionable nuisance. It, however, will only clean one tube at a time, but this is not an unmixed disadvantage, as the attendant has a better opportunity of seeing each tube, and can pass any part of a tube which is very thickly incrustated repeatedly through the machine, until it is perfectly clean. In a

hand side of the machine, as shown in the cut. The rollers give the tubes a slow revolving motion, and feed them through at the rate of from 2 ft. to 6 ft. per minute. The scale drops off in dust and small chips as the tubes pass through the machine, and is not thrown about so as to be liable to get into the bearings of neighboring machines.

The entrance tube is provided with a set of collars, which can be adjusted to suit the different diameters of tubes. These collars serve to support and guide the tube. The first set of rollers have their teeth nearly parallel to the length of the tubes. The teeth of these rollers consequently score the scale on the tube longitudinally. The second and third sets of rollers can be plainly seen in our illustration.

The second set of rollers are of steel and grooved circumferentially, while the third set are of rubber. These are driven by suitable gearing, and grip and feed the tube forward. Their axes are nearly parallel with the length of the tube, and each roller is mounted on one end of a bell-crank lever. Each bell-crank lever is fulcrumed on a fixed point, while



RIEPEL'S DRILLING MACHINE.

rumbler, the number of revolutions which is more than sufficient to clean some tubes is quite insufficient for others, and therefore either time is wasted or some tubes are imperfectly cleaned.

The saving in power to drive the machine under notice is considerable, though no exact figures can be given on this point.

The principle on which the machine is constructed is to pass each flue separately between a series of toothed rollers. Some of these rollers have teeth approximately parallel to the length of the tube, and others have teeth at nearly right angles to the axis of the tube. The shallow milled teeth on the broad faces of the rollers cut into the scale in much the same way as a field is plowed and harrowed. The scale is thus divided and broken up, while the teeth are too blunt to injure the metal of the tube. The rollers are, moreover, kept to their work with springs, and can therefore only exert a certain pressure on the tube, and are thus enabled to yield at hard places, or spots where the incrustation is

the outer end is connected to a ring which can be moved by a worm and screw. The lower of the two hand wheels shown in our illustration is attached to the screw. It is obvious then, when the hand wheel is revolved, all the three bell-crank levers are moved simultaneously, and the tube is gripped accordingly with any desired amount of force. The bearings of the rollers in the bell-cranks are, however, provided with stiff rubber springs, so that the grip of the rollers is not rigid, and they can yield at an unusually hard spot.

These rollers score the scale on the tubes both longitudinally and circumferentially, and really cut it into small squares. The other two sets of rollers seen on the extreme right hand of our illustration are driven by the tube, and complete the operation of cleaning; peeling and dragging the scale off.

The whole apparatus as originally invented by Mr. Otto contained a very novel and ingenious combination of mechanical appliances, and the further improvements made by

Mr. Pedrick, together with the excellent workmanship usual in the machines made by this firm, will, we believe, render the tool valuable to all having charge of locomotive engines working with bad water.

Another special tool which has been lately introduced by Messrs. Flanders for the use of locomotive builders, is known as Rieppel's Drilling Machine. This machine is designed to drill all the holes in smoke-box and cylinder flanges at one setting. It can be centred at one end by three radiating arms, with pointed screwed ends. The front end is clipped to the front of the smoke-box as shown. This mode of securing the front end of the machine to the smoke-box can be adjusted to suit any length or diameter of smoke-box. This can be clearly seen by referring to the engraving.

The drilling head slides on a central shaft, and on two parallel rods. The latter are secured to cross-arms, which can be swung about the axis of the central shaft. This axis, as before explained, coincides with the centre of the smoke-box. Therefore, when the machine is correctly set, it is capable of drilling a truly radial hole in any part of the smoke-box.

The machine is intended to carry any drill not exceeding 1½ in. diameter. The first machine of the kind was used in the Pennsylvania Railroad shops at Renovo, Pa., where we understand it gave great satisfaction. It is stated that after the cylinders are in position, an expert man with helper can set the machine, and drill and ream all the holes, in from 4 hours.

New England Road-masters' Association.

Road-masters in the district covered by this organization are invited to attend the second annual meeting of the association, to be held at the Junction House, White River Junction, Vt., Oct. 8 and 9.

It is desired that all road-masters of New England should join the association, and if possible attend this meeting, prepared to discuss the questions below.

The business of the meeting will be:

1. Reading of minutes of last meeting.
2. Enrollment of new members.
3. Reading of communications.
4. Election of officers.
5. Report of Committees.
6. Unfinished business.
7. Discussion of the following questions:

Joints.—Best form for life of rails, ties, and rolling stock.
Foot Guard.—Best guard for safety of employes at frogs, switches and guard rails.

Rails.—Best form and weight for present rolling stock, with sections or tracings. See form of tread and flange for a standard car wheel shown in fig. 55 attached.

The proper point of Rail to measure Gauge from and width of Flange way at K, L, M, and N—see fig. 4; if Standard Wheel, see fig. 55—is adopted. Gauge of track being 4 ft. 8½ in., and gauge of flange 4 ft. 5½ in. to 4 ft. 5¼ in.
Road Tools.—Form of Claw Bar with wooden pattern 12 in. long; Spiking Maul, with Wooden Pattern and weight; Standard Track Gauge; Rail Bender and Track Drill.

Review of last year's discussion on Railroad Ties, Ballast, Frogs, Switches and Elevation of Curves.

8. Miscellaneous Business.

Meeting will be called together at 11 a. m., Oct. 8, and work is to be done until adjournment, Oct. 9, with proper intermission. No excursions on days of meetings.

The Executive Committee consists of Messrs. J. W. Shanks, New London Northern; J. S. Lane, New York, New Haven & Hartford; J. R. Patch, Connecticut River Railroad; R. Hyland, Concord Railroad, and W. F. Ellis, Providence & Worcester.

TECHNICAL.

Locomotive Building.

The Schenectady Locomotive Works in Schenectady, N. Y., last week delivered a 10-wheel freight engine to the St. Louis, Hannibal & Keokuk road.

The Boston & Albany shops in Boston last week completed another heavy passenger engine for the road.

The Philadelphia & Reading shops in Reading, Pa., are finishing up a lot of 10 heavy passenger engines for the New Jersey Central Division. They have no other new work on hand at present.

Car Notes.

The Fitchburg Railroad Co. has recently put in use a number of Eastman heater cars, which are thus described: "The car looks like an ordinary box car, with the exception that there are two funnel-shaped apertures projecting from the roof. Under the centre of the car is a box lined with zinc, which contains a kerosene stove, the reservoir for the oil being located underneath the floor of the car, a lead pipe conducting the oil to the stove. By the scientific adjustment of a metal valve, the flow of oil is regulated by the state of the atmosphere, so that as the cold increases the flow of oil is increased, and of course the heat thrown out by the stove increases in the same ratio. The ends, sides and floor of the car are double, having air-chambers between, and so connected with the stove that the warm air is in constant circulation under the car and around the sides and ends, entering the car near the top. Double doors are also provided. The oil reservoir holds enough to last two weeks, and being automatic in its working, the stove requires no attention beyond lighting when the car is loaded, and turning out the light when it is emptied. It will readily be seen from this description that the advantages over the old method of transporting fruit and vegetables are many and great. The car is more warmly constructed, the entire contents are surrounded by a warm air-chamber, and articles at the end are kept at warm as in the centre."

The Eastern Railroad Co. is equipping a number of its freight cars with the United States automatic car coupler and this coupler is also to be tried on the Maine Central road.

The works of the Marshall Car Wheel & Foundry Co. in Marshall, Tex., were destroyed by fire on the morning of Aug. 25. The loss is estimated at \$100,000, about one-third covered by insurance. The shops will be rebuilt at once.

The Missouri Car & Foundry Co., of St. Louis, has purchased the works of the Indiana Car Co., at Cambridge City, Ind., and will run those shops in addition to its own works in St. Louis.

The Gilbert Car Manufacturing Co., in Troy, N. Y., is building five passenger cars for the Savannah, Florida & Western road.

Iron Notes.

The Edgar Thomson Steel Works are now running their A furnace on spiegel iron, making from 45 to 50 tons a

day. The furnace is 80 ft. high and 13 ft. bosh, and the ore used is from West Virginia.

The Crawford Iron & Steel Co. has blown out its Neshannock Furnace at New Castle, Pa. The furnace is to be rebuilt and a new blowing engine put in.

The Thomas Iron Co. has put its furnace at Alburtis, in Lehigh County, Pa., out of blast.

The lining of one of the furnaces of the Stuart Iron Co., at Sharon, Pa., recently fell in, making it necessary to blow out the furnace.

The South Tredgar Iron & Nail Works in Chattanooga, Tenn., have a heavy contract for supplying spikes, bolts and fish-plates for the Missouri Pacific road. The works have also secured several large contracts for nails.

Manufacturing Notes.

The shafting, pulleys and hangers for the Electrical Exhibition in Philadelphia are furnished by Geo. V. Cresson, of the Philadelphia Shafting Works.

The Standard Tool Co. in Cleveland, O., having completed the necessary preparations, began the manufacture of twist drills on Sept. 1.

The Weimer Machine Works in Lebanon, Pa., recently completed a large blowing engine for the furnace at Robeson, Pa., and are now building very large blowing engines for the Paxton Furnace and for the Lochiel Furnace at Harrisburg.

The West Point Foundry Association, one of the oldest iron manufacturing companies in this country, will probably complete an arrangement with its creditors. The committee of creditors have reported that the assets of the association were largely in excess of the liabilities, and recommend the acceptance of notes at nine, twelve and eighteen months in settlement of the indebtedness, the agreement to be binding when 80 per cent. in amount of the creditors accept it.

Bridge Notes.

The Passaic Rolling Mill Co. in Paterson, N. J., has taken the contract for the new Wesel highway bridge over the Passaic River near Paterson.

The Phoenix Bridge Co. at Phoenixville, Pa., is putting up

diagonal corner timber. Deep ash-pans arranged in this way make frequent emptyings unnecessary.—*National Car-Builder.*

A Steel Lake Vessel.

The "Albany," the first steel vessel ever built on the lakes, was launched at Wyandotte, Mich., Aug. 23. She measures 282 ft. over all, and her carrying capacity is 2,500 tons. She was built for the Western Transit Co., of Buffalo, and was designed for the carrying trade of Buffalo and Chicago. She is expected to make 12 miles an hour. Her cost was \$200,000. The steel plating is from 1/4 to 3/4 in. thick.

Stone Crusher Car.

The *American Machinist* contains the following notice of a portable stone crusher which might be useful on some roads for preparing rock ballast:

"The Westinghouse Machine Co. has just built for the furnace of J. E. Thropp & Co., of Edge Hill, Pa., a portable outfit for crushing ore and slag. It consists of a flat car, on one end of which is mounted a Westinghouse water tube boiler and on the other a Gates crusher, to which is coupled directly a 30 horse-power Westinghouse engine, the coupling being made to serve as a breaking piece as well. A friction gear also connects the engine with one of the car axles, and the car is therefore self-propelling at will."

THE SCRAP HEAP.

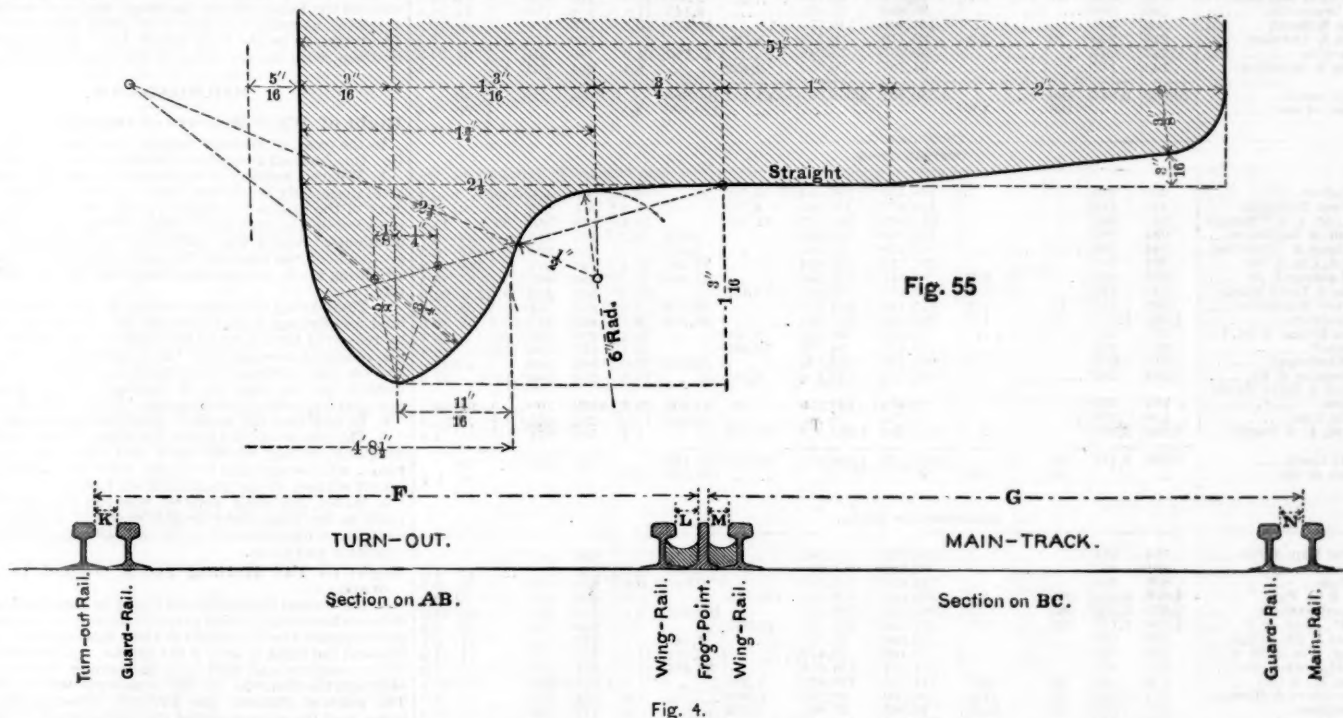
A Terrible Accident.

Near midnight on the 23th a car of a circus train on the Greeley, Salt Lake & Pacific road caught fire when near Windsor, Col. The fire spread very rapidly, as it is said that there were two barrels of gasoline in the car, which, it was supposed, caught fire from sparks from the engine. The car was the boarding car of the circus, having in it bunks for sixty men, most of which were occupied, and the only means of egress were the two doors and two small windows. The train was stopped as soon as possible, but the trainmen were unable to fight the fire and all their efforts were de-

for "with great difficulty and research I found the native gun at the village, and after a gang of men had amassed, I tried to turn him out of the bush and kill him. I succeeded in turning him out, but missed the aim of gun at half-past eight." That the sportsman should have thought it necessary to consult the office clock to see the exact time when the gun went off would make it seem as if its going off at all was considered a great feat. However, the tiger did not seem to regard it with much attention, for we read that it went into another bush "about 25 yards off the front of my office."

Business now called off the assailants. "No. 1 up train" came along and had to be attended to, after which office details kept the staff busy "till the departure of No. 4 down goods." But the tiger all this time remained in his bush, coolly waiting, as it were, for the commencement of the second innings. The game was reopened by our Hindoo sending some of the villagers to reconnoitre the bush and holding a council of war. Before this was concluded up came "No. 3 mixed train," and the noises that the engine made when drawing up at the station upset the tiger's equanimity, and it tried to make off down the line. But unfortunately for it, there were now three Englishmen on the spot—the guard and driver of the train and the Post Office Superintendent, who happened to be traveling by it. On learning what was the matter, they cut off the animal's retreat, which the clerk and villagers had apparently been attempting to expedite, and made it turn.

With men on one side and a train on the other, the tiger was for a moment puzzled, but—to continue the native's letter—"he all of a sudden jumped over the fencing wire and entered my office, and, jumping over the ticket cupboard, took a seat thereupon. I got the doors locked up immediately, not allowing him to come outside again. The country gun was ready again, and the Post-office Superintendent took it; and since there were no bullets here at the time, four copper coins, broken into 16 pieces, were all loaded into the gun, with gunpowder. During the interval the tiger twice took a walk over the booking-office counter, but seeing no way out, he again took his seat on the same cupboard." And here he was shot "by the



a new iron bridge over the Schuylkill River near Reading, Pa., on the Wilmington & Northern road. It replaces an old wooden bridge and must be erected without stopping the movement of trains.

Improvements in Spear's Car Heaters.

The latest styles of Spear's car heaters have some improvements which add materially to the effectiveness and economy of the apparatus. With the general features of these stove's railroad men are quite familiar, and will be able to understand by a brief description the nature of the improvements referred to. In order to provide for greater certainty in the movement of the air in the heater a change has been made in the arrangement of the hood. Instead of placing a valve at each end and the two valve seats are brought close together and placed so as to form an A when seen endwise. The valve is hung between the seats, and, of course, hangs vertically when the car is not moving, but as soon as it is in motion the air pressure carries the valve against the rear seat and the inflowing current is carried through the heater. This does away with one valve, to that extent simplifying the apparatus. A considerable increase in heating power has also been made by the introduction of vertical diaphragms into the air spaces on each side of the fire-box, which prevents the possibility of getting a direct delivery of cold air through the base of the stove in very cold weather. With a low fire, low temperature and high speed, it was possible heretofore for the air to pass the firepot without being sufficiently warmed. The diaphragms cause the cold current to traverse from bottom to top of the heating surface and make perfect heating much more certain. In the improved heaters, also, the smoke pipe is placed at the back of the stove so as to avoid the use of an elbow, and dampers are provided for both the stove and air pipe. If brakemen, who are not as a rule very well informed in respect to the nature and regulation of air currents, could be taken into the shop and shown one of these heaters dismounted, and have its operation explained to them, the saving in fuel consumption alone would be very considerable. When passengers feel that there is too much or too little heat, the fault is too often laid to the heater, when the cause is with the brakeman, who is perhaps doing his best to make the car comfortable without knowing the right way to do it. The heater, if properly managed, will secure good ventilation in winter; but attempts are too often made to assist it by making use of the summer ventilator, the result of which is to send a cold draft through the car and chill the passengers. On some roads these heaters have been rigged with an ash-pan opening through the floor to the outside, which relieves the car of a good deal of dust and dirt. The same could be done upon almost any car, unless there is a

voted to rescuing as many as possible of the inmates. Nine men were burned to death, seven others were seriously injured and about 20 were slightly hurt. The gasoline in the car was used for the torches of the circus, and some of the survivors said that there was a naked torch burning in the car not far from where the barrels stood, which would sufficiently account for the fire without attributing it to sparks from the engine.

A Costly Fire on a Train.

A dispatch from Chicago, Aug. 29, says: "The train of imported Shorthorns which met with an accident by fire yesterday arrived from Waltham, Mass., at the stock yards late last night. It was found, on arrival, that Grand Duchess XLIII, who had been reported, burned to death in her car, was yet alive, but was immediately put out of her misery. This animal cost 500 guineas at the late Shillbrook sale in England, and was one of the best Bates bred animals in America or England. In the same car was the pure bred Bates Duchess of Wappenham, that cost 2,000 guineas, but she escaped with only slight injuries. There was a big lot of other costly animals on the same train. They are the property of James J. Hill, President of the St. Paul, Minneapolis & Manitoba Co., and were on their way from quarantine to his stock farm, North Oaks, near St. Paul. The fire occurred in the straw bedding on the cars and is supposed to have been communicated by sparks from the locomotive."

A Railroad Hospital.

The Wabash, St. Louis & Pacific Railroad has just established a hospital for the benefit of its employes at Springfield, Ill. A building has been secured there with accommodations for 85 patients, and the company's surgeon is now making arrangements to open it. This is the third hospital established on this road.

A Tiger in the Ticket Office.

The Hindoo clerk of a railroad ticket office in India has made a remarkable official report. He begins the communication with a formal petition for "two guns, required for our protection from tigers, one of which was killed in my telegraph office at three o'clock," and then goes on to explain: "I have the honor to inform you that no sooner had No. 2 down mixed train from Calcutta crossed the point No. 1 than we saw a tiger about three yards in length and two yards in height, coming running from north to south along the fencing and enter a thick bush just opposite the point No. 1." This breezy definition of a tiger's dimensions, in which the length and height are given in yards, is a delightful touch, but the clerk was not daunted by its size,

Post-office Superintendent, with the gun prepared as aforesaid." The letter concludes with a repetition of the original petition: "This is a regular jungle, where we have got nothing to protect ourselves from such wild beasts generally frequenting any office. I therefore hope you will kindly arrange to send me the two guns, and oblige."—*London Telegraph.*

Attempt at Train Wrecking.

A dispatch from Helena, Ill., Aug. 29, says: "A fiendish attempt at train wrecking was made on Wednesday night on the Illinois Central road near this city. A heavy piece of casting was put in a frog on a bridge and wedged into it. Passenger train No. 3, which is due at 10:48 p. m., runs along this part at a high rate of speed. When it reached the frog Engineer McGraw felt the jar, and thinking he was off the track, reversed the engine, stopping the train almost instantly. An examination showed that the casting had been shattered, but for which the engine and probably several cars would have been thrown over the bank. No damage was done and the train proceeded. This is the second attempt to wreck trains in a similar way at the same place. No clue to the miscreants has been obtained."

On the morning of Sept. 1 an attempt was made to wreck the south-bound passenger train on the Virginia Midland road about three miles from Lynchburg, Va., by removing the fastenings from the rails. The whole train except the engine left the track. The cars upset in a deep cut but while they were somewhat damaged no one was injured. The object of the wrecker is believed to have been robbery. A man was seen near the place but escaped into the woods.

A Rebuke Reversed.

Sister Grimes, after hearing the announcement from the pulpit of the annual camp-meeting, at once determined to go. "Ef the weather permits," said she to her friend, Miss Simpkins, "and Providence is willin' I shall go an' stay through the meetin'." Accordingly the ancient hair trunk was packed and Sister Grimes set out. The first few miles were uneventful and were passed in counting the telegraph poles and musing upon the infinite. Suddenly a change came over the spirit of her dreams. She sat upright, with a startled expression, which soon changed to one of indignation. Suddenly she faced about and addressing a mild-looking man, with a white neckcloth, who sat behind her, inquired in a voice of terror: "What do you mean by insulting me in this manner?" "Indeed, madame?" "You needn't indeed, madame, me. You know you did

RAILROAD EARNINGS IN JULY.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Boston, Hoosac Tun. & West.	87	87				43,311	30,672	12,639			40.8	498	353	145	40.8
Eliz. Lex. & Big Sandy	284	284				346,285	334,728	11,557			3.6	1,219	1,178	41	3.6
Grand Trunk	2,321	2,321				1,317,185	1,411,712	94,527			6.7	588	608	20	6.7
Long Island	354	354				368,337	379,511	11,174			2.9	1,041	1,072	31	2.9
N. Y. Sus. & Western	147	147				97,017	89,189	7,828			8.8	660	607	53	8.8
Northern Central	322	322				477,516	474,534	2,982			0.6	1,483	1,474	9	0.6
Pennsylvania	2,125	2,048	77		3.8	3,989,085	4,130,950	141,865			3.4	1,877	2,017	140	7.0
Philadelphia & Reading	1,560	1,560				2,767,791	2,979,004	211,203			7.1	1,774	1,910	136	7.1
Rochester & Pittsburgh	294	294				111,238	63,486	47,752			75.2	378	286	92	32.2
Rome, Watertown & Og.	417	417				151,956	141,956	10,000			7.0	364	340	24	7.0
West Jersey	188	188				178,532	178,247	285			0.2	948	947	1	0.2
Total, 11 roads	8,099	7,950	149			9,848,253	10,213,909	365,345			3.6	1,216	1,285	69	5.4
Total inc. or dec.			149		1.8									69	5.4

SOUTHERN ROADS.															
Alabama Great Southern	290	290				73,459	72,345	1,114			1.5	253	249	4	1.5
Chesapeake & Ohio	517	517				327,033	335,208	8,175			2.4	633	648	15	2.4
Eliz. Lex. & Big Sandy	130	130				106,928	103,435	3,493			7.9	523	488	35	7.9
Ches. Ohio & Southern	399	399				106,928	103,435	3,493			7.9	523	488	35	7.9
Cin., N. O. & Tex. Pacific	336	336				220,360	228,358	7,998			3.4	656	680	24	3.4
East Tenn., Va. & Ga.	1,098	1,098				241,136	254,102	12,966			5.1	219	231	12	5.1
Mem. & Charleston	292	292				102,696	89,615	13,081			14.5	352	307	45	14.5
Fla. Ry. & Nav. Co.	498	477	21		4.4	146,831	134,540	12,291			9.1	295	282	13	4.6
Kentucky Central	254	230	24		15.3	84,397	80,730	3,667			4.5	332	367	35	9.5
Louisville & Nash.	2,065	2,065				1,073,000	1,124,775	51,775			4.6	520	545	25	4.6
Mobile & Ohio	528	528				128,415	134,464	6,049			4.6	243	255	12	4.6
Nashville, Chattanooga & St. L.	554	554				187,478	185,408	2,070			1.1	338	353	15	4.0
N. Orleans & Northeastern	193	193				24,860	8,909	15,951			179.2	127	86	41	47.7
Norfolk & Western	503	503				185,824	210,188	24,364			13.0	389	439	50	15.0
Rich. & Danville	757	757				250,923	272,282	21,359			7.8	331	369	38	7.8
Char. Col. & Augusta	370	339	31		9.1	40,879	46,785	5,906			12.5	110	135	24	18.5
Col. & Greenville	296	296				30,880	35,023	4,143			11.8	104	118	14	11.8
Virginia Midland	352	352				131,306	146,777	15,471			10.5	373	418	45	10.5
Western N. Carolina	210	200	10		5.0	35,719	30,533	5,186			16.7	170	158	12	7.5
South Carolina	247	247				59,255	75,044	15,789			21.0	240	304	64	21.1
Vicksburg & Meridian	142	142				31,787	29,355	2,432			8.4	224	207	17	8.4
Total, 21 roads	10,033	9,847	186			3,550,801	3,680,667	129,866			3.5	354	374	20	5.4
Total inc. or dec.			186		1.8									20	5.4

CENTRAL GROUP.															
Chi. & Eastern Ill.	252	252				128,404	120,694	7,710			6.4	509	479	30	6.4
Chi. & West Michigan	410	410				124,877	120,125	4,752			3.9	304	293	11	3.9
Cin., Ind. St. L. & Chicago	342	342				211,822	190,122	21,700			11.4	619	558	61	11.4
Cin., Wash. & Baltimore	284	284				140,002	146,923	6,921			4.7	493	517	24	4.7
Cleve., Akron & Columbus	144	144				41,132	43,985	2,853			6.5	286	305	19	6.5
Cleve., Col. Cin. & Ind.	391	391				292,212	302,604	10,392			19.4	747	927	180	19.4
Detroit, Lansing & No.	258	258				98,497	121,355	22,858			23.3	380	467	87	18.5
Evansville & Terre Haute	146	146				73,497	59,331	14,166			19.0	503	406	97	24.0
Flint & Pere Marquette	362	347	15		4.3	171,148	184,427	13,279			7.2	473	531	58	10.9
Illinois Central	1,526	1,501	25		1.7	707,097	772,792	65,695			8.5	463	515	52	10.9
Louisville, Evans. & St. L.	255	255				56,000	48,000	8,000			16.7	220	188	32	16.7
Ohio Central	212	212				101,218	84,731	16,487			19.4	477	398	79	19.4
Ohio & Mississippi	615	615				283,102	333,193	50,091			15.0	460	542	82	15.0
Peoria, Decatur & Ev.	254	254				54,002	45,820	8,182			18.0	213	180	33	18.0
St. L., Alton & Terre Haute	195	195				83,475	101,758	18,283			18.0	428	522	94	18.0
Main Line	138	138				45,530	55,580	10,050			17.2	333	403	70	17.2
Belleville Line	138	138				1,234,358	1,216,811	17,547			1.4	346	341	5	1.4
Wabash, St. L. & Pacific	3,566	3,566				1,234,358	1,216,811	17,547			1.4	346	341	5	1.4
Total, 17 roads	9,350	9,312	38		0.4	3,846,229	4,008,231	162,002			4.0	411	430	19	4.4
Total inc. or dec.			38		0.4									19	4.4

NORTHWESTERN ROADS.															
Bur., Cedar Rap. & No.	714	714				195,970	195,980	10			19	281	281		
Central Iowa	401	401				96,322	100,972	4,650			4.6	240	252	12	4.6
Chi. & Alton	850	850				724,619	731,503	6,884			0.9	882	880	2	0.9
Chi., Mil. & St. Paul	4,800	4,520	280		6.2	1,950,000	1,829,285	120,715			6.0	406	405	1	0.2
Chi. & Northwestern	3,850	3,590	260		7.5	1,962,300	2,100,631	138,331			9.2	510	602	92	15.3
Chi. St. P. Minn. & O.	1,290	1,170	120		10.3	461,300	444,337	16,967			3.7	358	380	22	5.8
Des Moines & Ft. Dodge	138	138				23,680	25,479	1,799			7.6	172	183	11	6.1
Green Bay, Win. & St. P.	220	220				22,468	25,479	3,011			13.4	102	116	14	11.8
Ill. Central Iowa lines	402	402				121,197	154,618	33,421			21.6	301	384	83	21.6
Marquette, H. & Ont.	138	100	38		38.0	141,123	138,823	2,300			1.7	1,023	1,388	365	26.2
Mil., Lake Shore & West.	374	326	48		14.5	95,109	88,239	6,870			7.8	254	271	17	6.3
Min. & Northern	227	185	42		22.7	40,083	37,805	2,278			6.0	177	204	27	13.3
Wisconsin Central	440	440				106,071	108,159	2,088			2.3	242	248	6	2.3
Total, 13 roads	13,844	13,056	788		5.6	5,940,842	6,042,123	101,281			1.7	429	463	34	7.3
Total inc. or dec.			788		5.6									34	7.3

ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	2,408	1,704	704		41.4	560,000	548,000	12,000			2.2	233	321	88	27.5
Northern Pacific	2,453	1,701	752		44.2	1,026,449	850,233	176,216			20.7	418	500	82	16.4
St. P. & Duluth	227	210	17		8.1	116,773	137,924	21,151			14.1	514	457	143	21.8
St. P., Minn. & Manitoba	1,387	1,350	37		2.7	602,011	612,706	10,695			1.8	434	454	20	4.6
Total, 4 roads	6,475	4,965	1,510		30.3	2,305,233	2,148,913	156,926			7.3	356	433	77	17.8
Total inc. or dec.			1,510		30.3									77	17.8

SOUTHWESTERN ROADS.															
Fort Worth & Denver.....	110	110	..	....	....	50,359	27,923	22,436	...	80.2	458	254	204	...	80.2
Gulf, Colorado & Santa Fe.	536	536	...	...	...	126,814	166,555	...	39,741	23.8	237	311	...	74	23.8
Houston, E. & W. Texas	140	120	20	...	16.7	25,614	24,115	1,499	...	6.2	183	201	...	18	8.9
Kan. City, Ft. Scott & Gulf.	389	389	...	...	...	191,132	142,135	48,997	...	34.5	491	365	126	...	34.5
St. L., Ft. Scott & Wichita.	160	128	32	...	25.0	39,653	20,222	19,431	...	96.2	248	158	90	...	57.0
St. L. & San Francisco	775	750	25	...	3.3	367,858	280,020	87,838	...	31.3	575	373	102	...	27.3
Vicks, Shreveport & P.....	124	73	51	...	69.8	14,352	4,119	10,233	...	249.3	110	58	58	...	100.0
Total 7 roads.....	2,234	2,106	128	815,782	605,089	190,434	39,741	...	365	316	49	...	100.0
Total inc. or dec.....	128	...	6.1	150,693	...	22.6	49	...	100.0



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

JULY EARNINGS.

Our full table of railroad earnings in July has reports from 74 railroads, with 53,098 miles of road this year. Their aggregate mileage and earnings and average earnings per mile this year and last in July were:

	1884.	1883.	Inc. or Dec.	P. c.
Miles	53,098	50,298	+ 2,800	5.6
Earnings	\$28,151,140	\$28,785,208	-\$634,068	2.2
Earnings per mile	531	574	- 43	7.5

The decrease of 2½ per cent. in earnings would be insignificant but for the large increase of 5½ per cent. in mileage. There have been 2,830 more miles whose working expenses and interest had to be paid, and there was \$780,500 less to do it with. The decrease in net earnings has probably been much more than that in gross earnings, and the decrease in the stockholders' profits—in the surplus remaining after paying fixed charges—must be still greater. The comparison is with a month which cannot be called favorable, for though 88 roads reporting for July last year had an increase of 7½ per cent. in aggregate earnings, in earnings per mile there was a decrease of 3 per cent. The reduction in the number reporting is itself an unfavorable sign, as reports are apt to be withheld or to appear late when they are unfavorable. But the changes from last year in the list are exceptionally numerous. Two lines which reported their earnings separately last year have them included with those of another line this year. Aside from these no less than 24 railroads whose earnings were included in our July table last year are absent from it this year, while on the other hand 12 report their earnings this year which did not last. Most of the latter, however, are roads of small mileage and earnings, the more important being the Cleveland, Columbus, Chicago & Indianapolis (which shows a decrease of 19½ per cent.), and the Ohio & Mississippi (with a decrease of 15 per cent.) These are exceptions, however, for nine of the 12 roads that reported this year but not last had an increase in earnings this year, and 19 of the 24 which reported last year but not this had an increase last year. These roads which did not report this year include several of the more important ones, but most of them will report a little later. They had then 18,687 miles of the 64,992 reporting and made \$687,431 of total \$904,913 of increase, and if we take only the 62 railroads which have reported each year we have:

	1884.	1883.	1882.
Miles	40,280	40,223	41,721
Earnings	\$26,814,881	\$27,478,889	\$25,534,316
Earnings per mile	544	594	612

Thus the decrease in earnings per mile for this group of roads is 8.4 per cent. from last year, and 11.1 per cent. from 1882—greater since last year than that of the whole number of roads now reporting, since most of

those which reported this year but not last show a gain.

But though July was less favorable in 1883 than in 1882, it was also less favorable in 1882 than in 1881, 68 roads then reporting an average decrease of 3 per cent. in earnings per mile. We have to go back to 1881 to find a July when there was an increase, when the 54 roads reporting gained 4.8 per cent. It will be interesting to compare the mileage, earnings and earnings per mile of the roads that have reported for July in 1881 with those for this year, which we do below for 45 roads:

	Miles.		Earnings.		Earn. per mile.	
	1881.	1884.	1881.	1884.	1881.	1884.
Ala. Gt. So.	290	290	\$57,982	\$73,459	\$199	\$253
Bur. C. R. & No.	564	714	174,351	195,970	309	281
Central Iowa	190	401	88,713	96,322	467	240
Central Pac.	2,635	3,003	1,899,346	1,844,000	721	614
Ches. & Ohio	435	517	225,096	327,033	517	633
Chic. & Alton	840	850	676,205	724,619	807	852
Chic. & E. Ill.	230	252	126,139	128,404	568	509
Chic. & Mil. & St.	3,800	4,800	1,568,706	1,950,000	413	406
Chic. & N. W.	2,800	3,850	1,983,013	1,992,300	709	510
Chic. St. P.						
Min. & Om.	950	1,290	383,202	461,300	403	358
Cin. Ind. St. L.						
& C.	300	342	177,161	211,832	590	619
Cin. N. O. & Tex.						
Cleve. Al. & C.	336	336	189,819	220,360	565	656
Det. L. & Nor.	144	144	29,805	41,132	207	288
E. Tenn. Va. & Ga.	238	238	112,707	98,047	499	380
Ev. & Terre H.	900	1,098	222,769	241,136	247	219
Flint & Pere Mar.	144	146	60,550	73,497	421	503
Green Bay, W. & Gulf.	318	362	137,640	171,148	432	473
Gulf. Col. & S. F.	220	220	32,472	22,468	148	102
Houston, E. & W.	290	536	66,052	126,814	254	237
Ill. C. Ill. & So. Div.	1,490	1,526	748,805	707,097	502	463
" Iowa lines.	402	402	171,686	121,107	426	301
K. C. Ft. S. & G.	320	389	122,394	191,132	382	491
Long Island	328	354	243,880	308,337	744	1,041
Louis. & Nash.	1,849	2,065	817,135	1,073,090	444	520
Mar. H. & Ont.	88	138	154,755	141,123	1,759	1,023
Mil. L. S. & W.	250	374	49,631	95,109	199	254
Mobile & Ohio	508	528	135,548	128,415	268	243
N. C. & St. L.	467	554	150,430	187,475	322	338
Norfolk & West.	428	503	173,375	185,824	465	369
Northern Cen.	322	322	440,811	477,516	1,352	1,483
Northern Pacific.	754	2,453	393,280	1,026,449	521	418
Ohio Central	232	212	55,226	101,218	238	477
St. P. Minn. & M.	850	1,387	387,488	692,011	456	434
So. Carolina	243	247	63,984	69,255	281	240
Vicks. & Mer.	142	142	31,677	31,787	223	224
Wabash	2,480	3,566	1,131,752	1,234,258	456	346
Wis. Central	520	440	77,805	106,671	150	242

The aggregates are:

	1884.	1881.	Inc. or Dec.	P. c.
Miles	40,425	31,537	+ 8,888	28.2
Earnings	\$23,258,239	\$19,730,084	+\$3,528,155	17.9
Earn. per mile	575	626	- 51	8.0

Evidently the 8,888 miles of additional road are not worked for nothing, and the interest on its cost is an important amount. An average decrease of 8 per cent. in earnings per mile means a good deal when so many of the roads were new in 1881 and 20 out of the 45 actually have had an increase, in several cases very large.

Considering the separate railroads we see some astounding changes. Northwest of Chicago we see that the Northern Pacific, with a gain of 225 per cent. in mileage, has an increase of but 162 per cent. in earnings, which, however, considering the newness of the country on the new road, is not surprising; the Manitoba did not have its great boom until after 1881, and its earnings have not lacked much of keeping pace with its mileage; per mile of road they are still larger than those of the Northern Pacific. The St. Paul & Duluth has a gain of one-fourth in earnings per mile; the Chicago, Milwaukee & St. Paul has added 26 per cent. to its mileage and has gained 24 per cent. in earnings—keeping up wonderfully well; the Chicago & Northwestern on the other hand, having added 1,050 miles (37 per cent.) to its mileage, has slightly smaller total earnings this year than in 1881, and has a decrease of no less than 28 per cent. in earnings per mile. The St. Paul & Omaha has suffered a decrease of 11 per cent. in earnings per mile. The Green Bay & Winona road, without change in mileage, has lost 9 per cent. in earnings; the Iowa lines of the Illinois Central earned \$50,000 (30 per cent.) less this year than in 1881; the Central Iowa more than doubled its mileage and gained 8 per cent. in earnings, the earnings per mile, falling off 49 per cent. The Milwaukee, Lake Shore & Western has added one-half to its mileage and nearly doubled its earnings, which are still very light, however; the Marquette & Ontonagon earns 9 per cent. less with 60 per cent. more road; the Wisconsin Central, with 15 per cent. less road, earned 37 per cent. more money. But aside from the lumber roads, we see that there has generally been a large decrease in earnings per mile of these roads northwest of Chicago.

For the country southwest of Chicago we have few examples. The Chicago & Alton gained 6 per cent. in earnings per mile; the Kansas City, Fort Scott & Gulf 23 per cent., the St. Louis & San Francisco 11 per cent. the Illinois lines and Southern Division of the

Illinois Central, on the other hand—all east of the Mississippi—had a decrease of \$41,700 in total earnings, and one of 7½ per cent. in earnings per mile.

Railroads north of the Ohio and east of the Mississippi generally make an unfavorable showing, the decreases in earnings per mile being 10 per cent. on the Eastern Illinois, 30 per cent. on the main line and 13 per cent. on the Belleville line of the Alton & Terre Haute, 32 per cent. on the Wabash, and 24 per cent. on the Detroit, Lansing & Northern; but there is an increase of 37 per cent. on the Cleveland, Akron & Columbus, of 100 per cent. on the Ohio Central, and of 2 per cent. on the Peoria, Decatur & Evansville over their very light earnings in 1881, and of 10 per cent. on the Flint & Pere Marquette, and of 5 per cent. on the Cincinnati, Indianapolis & Chicago over earnings that were not very light in 1881.

In the East the Pennsylvania and the Reading have decreases (6 per cent. and 5 per cent.) in earnings per mile, the Northern Central an increase of 10 per cent., the Long Island an increase of no less than 40 per cent.

In the South there are many large gains, but there is a decrease on the East Tennessee (22 per cent. more road but 8 per cent. more earnings), the Gulf, Colorado & Santa Fe, the Mobile & Ohio, the Norfolk & Western, and the South Carolina, which in all cases but those of the Mobile & Ohio and the South Carolina may be attributed to a large addition to mileage which has not yet developed traffic.

In the Far West the Central Pacific with 14 per cent. more road earned 3 per cent. less money, and if we had the reports of the Union Pacific and the Denver & Rio Grande, they would probably make a still worse showing; but the Atchison, Topeka & Santa Fe might show an improvement.

Compared with last year, as we have heretofore shown, the four roads northwest of St. Paul had a decrease of 17½ per cent. in earnings per mile. Thirteen other railroads northwest of Chicago make the following showing:

	1884.	1883.	Inc. or Dec.	P. c.
Miles	13,844	13,056	+ 788	6.1
Earnings	\$5,940,842	\$6,042,123	-\$101,281	1.7
Earn. per mile	429	463	- 34	7.3

There were decreases on all but the Milwaukee & St. Paul, the St. Paul & Omaha and three small Wisconsin and Michigan roads and a decrease in earnings per mile on all but the Milwaukee & St. Paul, the most important being on the Northwestern and the Iowa lines of the Illinois Central.

The Missouri Pacific system is lacking in the table for roads west and southwest of St. Louis, and as it includes nearly three-fourths of the mileage and the most important roads, the totals cannot be taken as indicating the course of traffic in the Southwest. There was an increase of 15½ per cent. in the average earnings per mile of the roads reporting; all but the Gulf, Colorado, & Santa Fe having a gain in total earnings, and all but it and another Texas road a gain in earnings per mile. Most of the gain is made by Missouri and Kansas roads, all of which show large gains.

The 17 roads north of the Ohio that report make the following showing:

	1884.	1883.	Inc. or Dec.	P. c.
Miles	9,350	9,312	+ 38	0.4
Earnings	\$3,840,229	\$4,008,231	-\$168,002	4.0
Earn. per mile	411	430	- 19	4.4

This would not be a very bad showing if these roads had done well last year; but the average earnings per mile are very light for railroads in so populous and rich a district. Eight of the 17 report an increase both in total earnings and in earnings per mile, these roads having had very little increase in mileage since last year. Some of these increases are quite large, as 24 per cent. on the Evansville & Terre Haute, 19½ per cent. on Ohio Central, 18 per cent. on the Peoria & Evansville, and 11½ per cent. on the Cincinnati, Indianapolis & Chicago, but there are many large decreases also.

The 21 Southern roads east of the Mississippi report as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Miles	10,033	9,847	+ 186	1.8
Earnings	\$3,550,801	\$3,680,667	-\$129,866	3.5
Earn. per mile	354	374	- 20	5.4

These roads, until recently, have had much better earnings than the crops of last year led us to anticipate, but at last they show a falling-off. Still nine of the 21 have an increase in total earnings, and eight an increase in earnings per mile. In the case of the Memphis & Charleston and the New Orleans & Northeastern this increase is large, but the latter's earnings are still extremely light, this being the first year it has been open through. The decreases also are generally small, the largest being 15 per cent. by the Norfolk & Western, 18½ per cent. by the Charlotte, Columbia & Augusta, and 21 per cent. by the South Carolina.

The 11 Eastern roads report:

	1884.	1883.	Inc. or Dec.	P. c.
Miles	8,099	7,950	+ 149	1.8
Earnings	\$9,848,253	\$10,213,969	-\$365,716	3.6
Earn. per mile	1,210	1,285	- 75	5.4

Seven of the 11 roads have some increase in total

earnings, and also in earnings per mile, but these are mostly small roads. There is a great gain on the Hoosac Tunnel & Western, but that is a very small road. The only New England line in the list, the Eastern, a great passenger and excursion line, has a gain, which is doing better than was to be expected in this dull year, when people are supposed to spend less money than usual. The Grand Trunk's decrease is considerable, and so is the Reading's, but none of these roads show the large percentages of decrease not uncommon further west. Indeed, under the circumstances their earnings are very good; but we are forced to believe that they are much above the average, as the monthly reports of the Erie and the quarterly of the New York Central show that they have been having very large decreases, which certainly were not arrested, though possibly they may have been slackened, in July.

Earnings Per Mile in July.

We give below a table of the earnings per mile of 62 railroads in the month of July for six successive years, or for as many of these years, not less than three, as the information is accessible:

Railroad Earnings in July, 1879 to 1884.

	1879.	1880.	1881.	1882.	1883.	1884.
Ala. Grt. So.	\$113	\$164	\$199	\$210	\$249	\$253
Burl. C. R. & N.	249	292	309	307	281	281
Canada Pac.	...	...	...	377	321	333
Cent. Iowa.	...	...	467	316	252	240
Central Pac.	637	758	721	674	685	614
Chas. Col. & Aug.	113	161	180	171	135	110
Ches. & Ohio	399	548	517	622	648	633
Chic. & Alton	639	844	807	827	860	852
Chic. & E. Ill.	418	519	568	619	479	509
C. Mil. & St. P.	438	330	413	342	405	406
Chic. & N. W.	609	682	708	634	602	510
Ch. St. P. M. & O.	284	304	403	346	380	358
Chic. & W. Mich.	178	231	...	363	293	304
Cin. I. St. L. & C.	553	680	...	596	556	619
C. N. O. & T. P.	...	...	563	664	680	656
Cin. W. & Balt.	...	...	...	562	517	493
Clev. Ak. & Col.	187	197	207	274	305	286
C. C. C. & I.	800	1,139	972	...	927	747
Col. & Greenville	...	...	...	118	118	104
Des M. & Ft. D.	...	336	427	281	183	172
Det. L. & N.	406	444	499	544	467	380
E. T. Va. & Ga.	254	252	247	262	221	219
Easton	883	1,005	1,076	1,159	1,178	1,219
Eliz. L. & B. S.	...	...	...	397	488	523
Ev. & Terre H.	...	...	421	759	406	503
Flint & P. M.	283	378	432	431	531	473
Green B. W. & St. P.	...	...	148	122	116	102
Gulf. C. & S. F.	...	...	254	226	311	237
H. E. & W. Tex.	...	...	142	243	201	183
Ill. Cent.	...	532	502	556	515	463
Ill. & So. Div.	...	339	426	349	384	301
Iowa Lines	292	313	382	371	365	491
K. C. Ft. S. & G.	...	...	744	996	1,072	1,041
Long Island	...	431	454	444	525	520
L. & Nashville	...	...	1,759	1,833	1,388	1,023
Marq. H. & O.	...	...	235	308	234	307
M. M. & Charleston	...	...	137	199	251	271
Mill. L. S. & W.	...	...	218	258	256	253
Mobile & Ohio	...	...	382	334	322	333
Nash. C. & St. L.	...	...	688	746	781	802
N. Y. & New Eng.	...	...	...	791	607	660
N. Y. Susq. & W.	...	...	323	340	405	447
No. folk & West	...	...	905	1,382	1,352	1,474
Northern Cen.	...	...	324	521	531	590
Northern Pac.	...	...	299	334	359	418
Ohio Central	...	...	1,622	1,843	2,060	2,017
Pennsylvania	...	...	...	225	209	180
Piedmont & E. V.	...	...	1,408	1,518	1,847	1,910
Rh. & Reading	...	...	...	256	323	341
Rich. & Danville	...	...	...	...	...	...
St. L. A. & T. H.	...	...	...	...	...	...
Main line	494	708	609	672	552	428
Belleville line	532	745	384	609	473	333
St. L. & San Fran.	347	361	426	483	373	475
St. P. & Duluth	302	408	403	467	514	...
St. P. M. & Man.	431	415	456	936	454	434
South Carolina	192	253	263	282	304	240
Vicks. & Meridian	...	...	223	187	207	224
Vicks. S. & Pac.	...	...	...	...	38	58
Va. Midland	...	...	...	349	418	373
Wabash	...	552	456	424	341	346
Western N. C.	...	...	...	103	158	170
West Jersey	...	...	...	...	982	947
Wis. Central	...	...	150	153	248	242

Of these 62 roads 10 had larger earnings per mile this year than in any previous July reported, among these being the Alabama Great Southern, the West Michigan, the Eastern, the Fort Scott & Gulf, and the Memphis & Charleston. Thus last July was not bad for all railroads, by any means.

But no less than 17 roads report smaller earnings per mile this year than in any previous year of the six, and among these are several very important railroads—the Central Pacific, the Chicago & Southwestern, the Cleveland, Columbus, Cincinnati & Indianapolis, the East Tennessee, the Illinois and Southern lines of the Illinois Central, the New York & New England, and both lines of the Alton & Terre Haute. Moreover there are four roads whose earnings this year are less than in any other since 1879, though greater than in 1879, namely, the Eastern Illinois, the Iowa lines of the Illinois Central, the Mobile & Ohio, and the South Carolina.

Against these we should set seven lines whose earnings were less this year than last, but greater than in any other since 1878—which have simply lost a little of the exceptionally large earnings they had last year. These are the Chesapeake & Ohio, the Chicago & Alton, the Cleveland, Akron & Columbus, the Flint & Pere Marquette, the Long Island, the Milwaukee, Lake Shore & Western, and the St. Paul & Duluth.

The losses prevail, however, and on many of the roads they are very decided.

Effect of Larger Grain Supplies on Exports.

In view of the large grain crops harvested and nearly mature, it is important to know what effect may be expected from them. Probably we never had a wheat crop that did the country more good than that of 1873, which was not only abundant (the largest grown up to that time), but bore a high price in consequence of the foreign demand. During the following year the value of our wheat and flour exports was \$130,680,000, the average value of the exports having been about \$1.43 per bushel. This was more than the aggregate value of these exports for two years previous, and nearly as great as in any two years previous. The next year their value was \$47,000,000 less, and the value in 1873-74 was not equaled again until the crop of 1877 was marketed. The condition of business after the harvest of 1873 seemed so very bad that it could not be worse, but there can be no doubt that the large crop and the high price prevented the great crash from being even more ruinous than it actually was.

For the next three years the value of these exports averaged but \$81,650,000, but they increased nearly 80 per cent. the next year, and for the last seven years have been, in millions of dollars:

1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
122.0	100.3	225.9	212.7	149.3	174.7	123.7

Thus the exports last year were only about as large as in 1877-78, 102 millions less than in 1879-80, and 89 millions less than the next year. It will be remembered that it was with the rising tide of exports that business prosperity came.

Corn exports make but a slight figure in values, compared with wheat and flour. But they are comparatively a new export. In 1869-70 our exports were less than 2½ millions, the next year less than 8½. First in 1870-71 they reached 25 millions. For four years they varied little from that amount, but in 1875-76 rose to 34½ millions, and reached their maximum at the same time with the wheat and flour exports, and for the last seven years have been, in millions of dollars:

1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
48.0	40.7	53.3	50.7	28.8	27.8	27.8

We see in these years the effect of the light and heavy crops of corn, which have been, in millions of bushels:

1877.	1878.	1879.	1880.	1881.	1882.	1883.
1,400	1,540	1,755	1,717	1,194	1,617	1,351

But we do not see here the whole of the effect. The abundance of the corn crop is felt much more in the provision than in the corn exports. Now these grew large in 1876-77, when the corn exports did, and when the wheat exports were at their minimum. For seven years they have been, in millions of bushels:

1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
117.9	111.5	122.2	146.2	114.5	99.7	104.6

These exports averaged 79 millions per year for the three years to June, 1876, but rose to 110 millions the next year. Last year they were smaller than in any year from 1877 to 1882, and the falling-off since 1880-81 has been 41½ millions, or 28 per cent., which, together with a decrease of 23 millions in corn, makes a decrease of 64½ millions in export values which may reasonably be attributed to the poor corn crops, for the exports of beef and tallow, from cattle feeding chiefly on grass, have increased. This is about one-fourth less than the decrease of 89 millions in the wheat and flour exports in the same time.

The requirements for home consumption are now considerably greater—probably one eighth greater, than after the large crops of 1880, unless the stock of hogs is so reduced as to lessen the consumption of corn, which is quite possible. We shall probably have no more wheat to spare than then, but perhaps a great deal more corn. But the average value of the wheat exports (at the point of exportation) was given as \$1.14 cents for that year; of corn 55½ cents. Wheat is worth about 90 cents in New York now; in San Francisco probably no more than 78 cents, and a very large part of the exports must go from the Pacific coast. Corn is just now worth more than 60 cents in New York, and for November deliveries the price is 59, and the price at other exporting cities is but a little different. It is therefore possible that we shall get as much for our corn exports, and if so for our exports of hog products, as in 1880-81. The same amount of wheat as was exported in that year will, however, bring now about \$46,000,000 less money, yielding about \$166,000,000. It may well be, then, that even in our exports we shall gain more from our large corn crop than from our large wheat crop. There can be no question as to its greater value to this country. The largest estimate of the wheat crop would make the excess over last year worth less than \$100,000,000 at New York at present prices—at the farmers' stations probably not more than \$75,000,000. But the probable increase in the corn crop,

which, if we have no severe frost for two weeks, seems likely to be 300 million bushels, is worth in New York about \$175,000,000, and at the farmers' stations probably \$115,000,000 more than last year. It will have a good effect for more than one year, just as the failure of the crop in 1881 is felt to this day.

Exports and Imports of Eastern Ports.

About the years 1875 and 1876 a good deal of alarm was expressed by New York merchants because of a sudden increase of foreign commerce at Baltimore and Philadelphia. The railroad systems of these cities had then completed connections in their own interest with the great Western markets, and were bent on securing for the ports at their termini, whose receipts and shipments were then chiefly carried by these railroads, all the exports and imports they could command. In the last year of the war, Philadelphia exported but 4.2 per cent. and Baltimore 4.5 per cent. of the total value of the exports from Eastern ports—New York, Boston, Philadelphia and Baltimore. In 1871 New York had even a larger share of these exports, but its gain was chiefly at the expense of Boston. Philadelphia and Baltimore gained slowly until after 1875, in which year Philadelphia had 6.9, Baltimore 6.7 and Boston 7 per cent. of the aggregate, thus standing nearly on the same level. In 1876 was the great railroad war, waged, we may say to prevent a diversion of traffic from New York, which was an utter failure, for in that year Philadelphia's share of the exports rose to 10 per cent., Baltimore's to 7.7 and Boston's to 9 per cent. A fight for New York must necessarily be a fight for Boston, and in this case New York did the fighting and Boston gained all the benefit that accrued to that side. In 1877 Philadelphia reached its maximum percentage, however, namely, 10.6 per cent., and this was before we began to have large grain exports. Then for four successive years there were exceptionally large grain crops in the Ohio Valley, and Baltimore's share of the exports of the four ports increased largely, reaching 13.2 per cent. in the year ending with June, 1880, but by that time Philadelphia's share had fallen to 7½ per cent. In the last three years the two Southern ports have had comparatively a small share of the exports, little more than previous to 1876, but what they have lost has gone not to New York but to Boston, which, having had but 7 per cent. in 1875 and 9 per cent. in 1876, had 12.8 per cent. in 1882 and 13.4 per cent. last year, against 16.8 per cent. at Philadelphia and Baltimore together. Since 1875, which was before there was any considerable change at any of the three lesser ports, the gain at Boston has been just twice as great as at Philadelphia and Baltimore together.

The changes in imports have been comparatively trifling. The war had reduced the Baltimore imports, and they recovered directly afterwards; but from 1870 to 1884 New York's percentage of the aggregate imports of these four ports, the aggregate value of which has fluctuated greatly, has varied only between 77.6 (in 1873) and 80.8 (in 1884). While Philadelphia and Baltimore were largely increasing their share of the exports, they actually lost in imports. Since 1877 New York's average has been a trifle over 80 per cent. In that time there has been an increase at Boston and a decrease at the other two ports, the percentages having been:

Year to June 30.	New York.	Boston.	Philadelphia.	Baltimore.
1865.	80.8	13.9	3.8	2.5
1870.	78.3	12.6	3.9	5.2
1875.	78.0	11.9	5.1	5.9
1876.	79.2	9.4	5.7	5.7
1877.	79.7	10.2	4.7	5.4
1878.	80.3	10.4	5.0	4.3
1879.	80.0	10.3	6.2	3.5
1880.	78.7	11.7	6.2	3.4
1881.	79.7	11.3	6.0	3.0
1882.	80.6	11.4	5.6	2.4
1883.	80.4	11.7	5.5	2.4
1884.	80.8	11.4	5.8	2.0

The tendency to decrease at Baltimore is decided and continues. It is greater there than at Philadelphia, though Baltimore has maintained its export trade better. Boston has steadily maintained the gain made after 1879. In every year except 1876 and 1877 its imports have been more than those of Philadelphia and Baltimore together, and in the last three years from 43 to 48 per cent. more. Both in amount of foreign trade and in the rate of its growth of late years it is very much more important than either Philadelphia or Baltimore and second only to New York, though second with a long interval. If we add exports and imports together we shall find the value of the total foreign trade of the four foreign ports to have been:

	New York.	Boston.	Philadelphia.	Baltimore.
1884.	\$795,002,897	\$129,363,380	\$70,149,784	\$54,502,939
1883.	857,430,637	134,998,824	71,886,300	69,002,530
1882.	817,504,666	132,065,483	72,267,837	54,360,494
1881.	842,631,929	135,393,780	76,812,811	68,601,509
1880.	932,037,062	126,633,245	85,573,487	99,177,126

Thus in total value of imports and exports Boston surpassed Philadelphia and Baltimore together last year, as also in 1882, these being years of small grain

exports, which form the staple of the foreign trade of Baltimore especially. In 1880 Boston's trade was \$55,000,000 less than theirs, in 1881 \$30,000,000 less, in 1882 \$5,400,000 more, in 1883 \$6,500,000 less, last year \$2,700,000 more. The value of its imports exceeded those of its exports in all these years except 1831; last year there was not much difference. The falling off of grain exports has not affected it like the ports further south, because it does not export much grain—chiefly flour and provisions. Its large import trade also in a manner secures it a goodly amount of exports even when the total exports are small. The vessels that come there with goods will get return cargoes at some rate or other. Last year at one time they paid for grain instead of charging freight on it. At Philadelphia, and especially at Baltimore, the vessels must get nearly all their earnings from the outward cargo. At Boston, and still more at New York, the imports are so large that they pay a very considerable part of the expenses of the vessels.

We thus see that Boston is a much more formidable competitor of New York than either Baltimore or Philadelphia.

So much has been said of the immense grain crops of this year that many must suppose that there is actually ready for market an extraordinary amount. But actually on this coast there has been doubtless much less surplus grain to market than in most years. It seems to be forgotten that we have to market now only the remainder of the very poor corn crop of last year—poorer than that of the year before; that the winter wheat crop this year, though much larger than last year, is still, taking the whole country on this coast, a decidedly light crop compared with such years as 1879, 1880 and 1882; that the spring wheat and oats, which are excellent this year, were also excellent last year, and quite as good as this year except in Minnesota and Dakota, where it has been too early to ship new wheat heretofore, and where is the chief increase in wheat acreage. All these reported facts are confirmed by the actual marketing of grain of all kinds at the eight reporting Northwestern markets. These begin to show the effect of the new crops as early as the second week of July in some years, especially when winter wheat is early and the demand sharp; but excluding that week and beginning with the week ending July 19 this year and corresponding weeks of previous years, we find that the total grain receipts of St. Louis, Peoria, Chicago, Milwaukee, Duluth, Detroit, Toledo and Cleveland, for the six weeks ending Aug. 23, for eleven successive years have been, in bushels:

Year.	Bushels.	Year.	Bushels.
1874.....	24,467,155	1880.....	48,429,200
1875.....	22,006,369	1881.....	40,034,547
1876.....	20,753,078	1882.....	33,274,759
1877.....	26,626,755	1883.....	33,255,206
1878.....	37,904,118	1884.....	32,985,614
1879.....	35,033,527		

Thus the receipts of these markets have been smaller in these six weeks this year than in any other since 1877, though nearly the same as last year and the year before.

It is true that the receipts, especially in the earlier of these weeks, are likely to be chiefly of the previous year's crop; frequently the larger part of the receipts are corn, and it is not until August that there are shipments of new wheat as far north as Iowa, or of new oats from any quarter except Kansas and its latitude. But by August a very large part of the receipts are likely to be new grain when the crop is very abundant. Now, during the three weeks ending Aug. 23, the receipts of the Northwestern markets have been for 12 successive years:

Year.	Bushels.	Year.	Bushels.
1873.....	18,222,956	1879.....	19,099,328
1874.....	14,295,683	1880.....	23,946,127
1875.....	11,029,499	1881.....	22,508,231
1876.....	11,977,189	1882.....	14,967,112
1877.....	15,727,250	1883.....	20,229,980
1878.....	23,515,717	1884.....	21,765,944

Thus for these three weeks we find the receipts this year but little more than last year, and somewhat less than in 1881, 1880 and 1878. They were made exceptionally small in 1882, in spite of the largest winter wheat crop ever gathered in the West, because of the extremely small amount of corn and other grain remaining from the very bad crops of 1881.

With the movement of the spring wheat from Dakota and Minnesota, which is now beginning, as well as from Iowa and Nebraska, which has been going on for a short time, the receipts at these markets should compare more favorably with last year, especially as, because of the good promise of the growing corn crop, farmers will be likely to market the surplus of their old crop freely, so that though the stock is probably considerably less than last year, the receipts may be decidedly greater, this being a grain which is chiefly consumed on the farm.

The winter wheat movement which usually gives Philadelphia and Baltimore their heaviest receipts in

July or August slackens more and more, and has apparently passed its maximum for the year; for the receipts of these ports fall off, while those of New York keep up well, and are a larger proportion of the total Atlantic wheat receipts than before since the middle of July. We may trace the movement by the following statement of the number of bushels and the percentage of the total Atlantic wheat receipts arriving at each of the three ports in each of the five weeks ending Aug. 23:

	Week ending.	Aug. 2.	Aug. 9.	Aug. 16.	Aug. 23.
Baltimore: July 26.	Aug. 2.	Aug. 9.	Aug. 16.	Aug. 23.	
Bushels....	1,003,280	1,411,448	811,441	578,652	542,179
Per cent....	31.1	34.0	28.0	22.5	21.5
Philadelphia:					
Bushels....	411,300	530,400	285,900	251,210	110,500
Per cent....	12.7	12.5	9.9	9.8	4.4
New York:					
Bushels....	1,204,827	1,824,225	1,226,000	1,029,620	1,316,550
Per cent....	37.3	44.0	42.4	40.0	52.1
Total....	3,229,779	4,157,219	2,891,893	2,574,220	2,525,321

Philadelphia and Baltimore together received more than New York in the first two of these weeks, since when their receipts have declined both in amount and in percentage of the whole, until in the third week of August they were not equal to half the New York receipts, which with one exception were the largest of the season.

A little later the total receipts may be much larger than at any time heretofore, but the increase will probably not be at Baltimore, and chiefly at New York and Montreal, which get most of the lake shipments. The spring wheat is nearly all grown directly west of the lakes, and the crop is unusually large, while the winter wheat crop is mostly grown in thickly peopled states, which need a large part of their wheat, while the spring wheat states are thinly peopled and can consume but a very small part of their crop. The surplus of the country is so large that a great deal must be exported sooner or later, and for export the water route affords a material saving, the rate from Chicago or Milwaukee to New York being about 84 cents now, against 15 cents by rail, while from Duluth, which has now many millions of bushels more than ever before within easy reach of it, the difference should be much greater. Even when navigation closes the spring wheat may be expected to go chiefly to the more northerly Atlantic ports, as it is in a region which usually ships chiefly to these ports.

Some of the newspapers have said that the Grand Trunk has withdrawn, or given the required notice that it will withdraw, from the Chicago east-bound pool. This is not true. It is dissatisfied with the arbitrators' award, and has requested that the matter be resubmitted to arbitration, on the ground that important facts were not considered in making the award. This request goes to the Chicago Committee, which has probably not had a meeting yet since it was made.

The difference between Mr. Fink's award (which was presumably acceptable to the Grand Trunk, since it did not appeal from it) and the arbitrators' award is not so great as to warrant making any great disturbance, and we believe it is true that it is not so much the amount involved as the importance of having all proper and established facts considered in making awards of competitive traffic, that leads the Grand Trunk to ask for a re-hearing.

The "passenger war," if such it can be called, in which no one is fighting anybody, but every one is drawing a little of his own blood, continues. The railroad companies maintain rates at their own offices, but pay large commissions to the scalpers, and the latter give their customers a large part of the commission and do most of the business. All the pooled trunk lines consent to this, we believe, though the Pennsylvania does not itself pay commissions, but takes the consequences of maintaining rates by its lines while they are virtually cut on all the others. The heavy fall travel is beginning, with a prospect of light passenger earnings, the broker getting about a fourth of the regular price of the ticket. No one apparently has any grievance except what they have always had, but the railroads seem to have come to the conclusion that it is not worth while to maintain rates on part of the lines while others persist in paying commissions or otherwise demoralizing rates.

It is many years since we heard of serious lake competition for through passengers, but it appears now, and may cut a considerable figure hereafter. Steamers between Buffalo and Duluth are offering such fares that they attract passengers going from St. Paul to the East. The competition by steamboat is likely to be much more effective from Duluth than from Chicago, because the lake route is much more direct from Duluth. The distance by lake from Buffalo is about the same to Chicago and to Duluth,

but by rail it is 530 miles to Chicago and 1,000 miles to Duluth. The competition is likely to be much more effective at Duluth than at St. Paul, it is true, and there are very few people in or near Duluth; but there is a large community growing up west and northwest of Duluth, some 450 miles nearer to Duluth than to Chicago, and 1,700 miles or more from New York—a community of farmers, many of them emigrants from the East, who will be anxious at times to visit their old homes. The cheapest route is the best to many of these, and if a steamboat can help them on some 900 miles of their way at a low price, many of them will prefer the steamboat. When Manitoba and the country on the Northern Pacific and the Manitoba Railroad are fully settled, the passenger traffic on the lakes may become quite as important as in the days before the railroads reached Chicago, or even more so.

The interpretation of the law as to preferred debts given by the Wabash Receivers is said to be resented by the ticket brokers. They had a goodly stock of Wabash tickets when the Receivers were appointed; but the Receivers say that these tickets are evidences of a floating debt of a kind which they are not authorized to pay: they must take their chances with other unsecured floating debt. Honoring the tickets is paying them. Apparently the scalpers are not impressed by those presumed obligations of the Receivers, and they have adopted a policy which seems to be intended to induce these and other receivers to interpret the law differently. They decline any longer to sell tickets by way of the Wabash, however tempting the commission. As just now the trunk lines which ticket over the Wabash seem for the time to have transferred their through ticket business to the scalpers in New York, this makes it bad for the Wabash. It might do very well in spite of the scalpers when the trunk lines sold the great majority of the through tickets in their own offices: but when they charge \$22 for a ticket from New York to St. Louis, and the scalpers \$18 or less, the crowd of course goes to the scalpers' offices, where they can get cheap tickets by other routes, but not by the Wabash. Because of this "unjust discrimination," the Wabash is said to purpose selling tickets at a discount at its own offices—that is, to pay the commission to the passengers instead of the scalpers—a policy which to some railroad men seems to involve direful possibilities of "demoralization."

Whether the law supports this position or not, justice to the security-holders would seem to. All the mortgages in the world will not secure a debt if the owner or manager has power to sell a valid claim for the future earnings of the property mortgaged. A railroad company in difficulties might sell not only tickets but contracts to carry freight to an extent equal to its capacity for months or even years, and thus raise money on contracts to perform service which would, if valid, virtually have priority over first-mortgage interest. Such means of raising the wind have been resorted to, though not on a very large scale, heretofore, we believe; but it is an illegitimate method, because it is the sale of services already mortgaged, perhaps several times over—that is, it is illegitimate unless the buyers buy with the understanding of the prior claims. A farmer might as well sell the crops of future years to be grown on land covered with mortgages. He can sell, but only what he may happen to own at the time delivery is called for. In this case the Wabash, St. Louis & Pacific Railway Company sold what now the law has taken possession for the benefit, in the first place, of the secured creditors.

If this becomes established law, and all will understand that they buy tickets for future use subject to the claims of bondholders and other secured creditors, it will doubtless make people very careful not to buy large stocks of the tickets of companies which are in financial difficulties, which are the only ones that are likely to sell them. This is desirable. Railroad companies should not be able to raise money in that way, and when they do so they usually make discounts so large that they involve themselves and other companies in difficulties which do not soon end.

It has been reported that the St. Louis & San Francisco, the Atchison, Topeka & Santa Fe and the Atlantic & Pacific, having bought the 242 miles of the Mohave Branch of the Southern Pacific and got track rights over 382 miles more to San Francisco, count on earning \$10,000,000 from the through traffic. Last year the Central Pacific, which had the whole of the transcontinental traffic except the Oregon and Washington business for three months, earned \$3,302,016 from through traffic. Its haul was from 826 to 1,286 miles. The haul over the new line will be from 2,115 to 2,450 miles, extending to Kansas City and St. Louis; but if any one supposes that the Central

Pacific is going to give any large part of the California traffic, which it holds in the hollow of its hand, as it were, we think he will find himself mistaken; it has two roads to support, and will want to give some traffic to the Union Pacific and the Chicago, Burlington & Quincy (not to speak of the connections of its Southern Pacific line, which has heretofore carried about three-fifths of the freight), because they can give much to it. The Atlantic & Pacific, which has about one-fourth of the mileage in the line between St. Louis & San Francisco, is said to count on getting profit enough out of the through traffic to pay the interest on the first-mortgage bonds, amounting to \$787,680. This will require net earnings of the whole line amounting to about \$3,340,000. Half that would probably come nearer to the result of the first year's working. There are now too many lines to the Pacific to make it possible for any except those which collect the traffic on that coast by a system of railroads, as the Central Pacific and the Oregon Railway & Navigation Co. do, to get a support out of the through traffic alone.

In this matter, the famous "tripartite agreement" threatens to rise up to plague its inventors. The Atchison, Topeka & Santa Fe objected to remaining in the Transcontinental Association, a combination to make and maintain rates between the Missouri and the Pacific, because, as it says, the Union Pacific has given away its power to make west-bound rates to railroads east of the Missouri, and these railroads, two of which have connection with the Atchison as well as with the Union Pacific, have agreed to deliver all the transcontinental traffic they can command to the Union Pacific. The Atchison is not willing to make any agreement as to the traffic with connecting railroads which will not give it any under any circumstances. But it may be assumed that the Chicago & Alton and the Wabash (if the latter refuses to contract with the Union Pacific) will turn their trade over the Atchison, having nothing to hope from the Union Pacific; that the Chicago, Burlington & Quincy will do so is not probable, because it gets more than twice as long a haul on the traffic it takes by way of Denver.

All this should have been considered by the Central Pacific, however, which is interested in having the traffic go by way of Ogden rather than by way of Mojave, because it will have about 45 per cent. of the earnings on it if it goes by Ogden, and only about 18 per cent. of it if it goes by Mojave. The terms of the contract for the use of the 382 miles between San Francisco and Mojave are not described, but it does not seem probable that the Central Pacific has admitted a rival company into San Francisco without any restrictions.

The true inwardness of the contract between the Union Pacific and connecting lines east of the Missouri River is not very definitely known, but some things are said of it which are not true. The original "tripartite agreement" provided for what we may call an exclusive and defensive alliance between the Union Pacific on the one hand and the Chicago, Rock Island & Pacific on the other. It was apparently intended to exclude other railroads east of the Missouri. The contract was made by the officers of the Union Pacific at Omaha, but when submitted to the board of directors, they refused to approve an exclusive contract, and voted that all connections east of the Mississippi should be admitted to the benefits of the arrangement on equal terms. This made very different terms for the Rock Island and the St. Paul from those they had agreed upon, which were virtually, for what they should do for the Union Pacific they should each receive half of the Union Pacific business. The Union Pacific directors required them to do no less, but gave them less in return for one-third, one-fourth or one-fifth of the traffic each, according to the number of Omaha connections which should come in.

Whether a contract modified as required by the directors was entered into between the Union Pacific and the other two roads we believe is not positively known, but the companies have conducted themselves as if some agreement of that character had been made. It is a mistake to suppose that the Northwestern and the Wabash became parties to a contract with the other companies east of the Missouri. Their agreement was with the Union Pacific alone, and not with the Rock Island and the St. Paul at all. The Northwestern, since its purchase of the Blair lines in Nebraska, has not been willing to continue this agreement, which we believe was never ratified by its board.

It seems, then, that the Rock Island and the St. Paul may be left as they were in the beginning, the sole contractors with the Union Pacific, which latter,

however, apparently now feels embarrassed by the arrangement, as it well may be if all the Chicago railroads but two work actively to send shipments by the Northern Pacific, the Denver & Rio Grande and the Atlantic & Pacific rather than by the Union Pacific.

A locomotive having many novel features has lately been completed at the Lehigh Valley shops at Wilkes-Barre. It was designed specially for working fast passenger trains over the heavy grades between Wilkes-Barre and Manunka Chunk. The engine has 18 in. x 24-in. cylinders, and 66-in. wheels. The boiler is 54 in. diameter of barrel, and has 236 tubes 10 ft. 5 in. long. The fire-box is adapted for burning anthracite coal, and is 11 ft. long and 43 in. wide. The crown-bars do not rest on the sides of the box, but are bolted to vertical tee irons riveted to the outside fire-box.

The principal novelty is, however, in the valves and valve gearing. The motion of the latter is derived from the main connecting rod, no eccentrics or sliding blocks being used. The reversing is effected in a manner which, it is believed, will remove the objections hitherto experienced in this direction with all the existing forms of valve gearing which dispense with sliding blocks and eccentrics. The valves themselves are of a gridiron pattern and work vertically at the ends of the cylinders. The steam and exhaust valves are distinct, and as the steam passages are very short, little steam is wasted and plenty of compression can be obtained, even when the exhaust is kept open till nearly the end of the stroke. This valve gear is the invention of a well-known mechanical engineer, Mr. Geo. S. Strong, of Philadelphia.

On a recent trial trip the engine hauled a train of 14 passenger cars up a grade of 50 ft. to the mile at the rate of 20 miles an hour. The weight of the engine is stated to be 103,000 lbs. in working order, the tender weighing 73,000 lbs., and the whole train 850,000 lbs. Reckoning the total tractive force required at 11,000 lbs., the average pressure on the pistons would be about 93 lbs. per square inch, which, at 20 miles an hour, would give 587 indicated horse-power.

Numerous indicator diagrams were taken during the trial trip, and are remarkable for the late closing of the exhaust and the small and uniform amount of back-pressure.

The responses to our circular in respect to joints, nut locks and cross-ties have now reached a total of nearly 90,000 miles of railroad in the United States, in addition to something over 10,000 miles in Canada and Great Britain. In order to give time for the receipt of some further information, both home and foreign, a little further delay in the presentation of the facts gathered is necessary; but it may be stated in a general way, in respect to the use of broken or even joints, that the responses show the following facts:

The proportion of broken to even joints in the track as it actually exists is about as 5 to 8. Taking the expressed preferences, however, instead of the practice which has been followed in the past, broken joints have a decided majority. Such changes as are making, with two or three trifling exceptions, are exclusively the substitution of broken for even joints, and this is true of all parts of the country. The distribution of present practice is geographical to a very surprising extent. North and west of Chicago even joints are practically in exclusive use. In the Middle and Southern states broken joints are almost equally in exclusive use. In the New England states, and in Ohio, Indiana and Illinois, present practice is about equally divided.

These and the other facts collected will be more fully presented hereafter.

Chicago shipments eastward, through and local, of flour, grain and provisions, for the week ending Aug. 30, by the incomplete report to the Board of Trade, were 29,932 tons, against 37,543 in the corresponding week of last year, and 32,019 in 1882. For six successive weeks the shipments and the percentage going by each railroad have been:

Tons.	July 26.	Aug. 2.	Aug. 9.	Aug. 16.	Aug. 23.	Aug. 30.
Flour.....	3,527	3,419	3,313	3,849	3,425	3,406
Grain.....	23,726	14,492	13,004	16,754	23,268	18,972
Provisions.....	7,605	6,512	6,613	8,396	7,712	7,554
Total.....	31,858	24,423	22,930	28,912	34,405	29,932
Per cent.:						
C. & Grand T.	15.2	17.2	17.9	17.6	13.5	12.2
Mich. Cen. . .	10.0	9.1	11.0	14.2	11.8	9.1
Lake Shore . .	18.2	17.8	18.2	16.0	21.2	16.9
Nickel Plate . .	14.0	9.5	9.8	11.4	12.2	13.5
Ft. Wayne . . .	17.9	18.1	17.1	15.9	18.6	16.8
C. St. L. & P . .	5.5	7.2	6.2	7.0	6.3	10.1
Balt. & Ohio . .	9.0	11.0	10.3	8.6	7.9	11.4
Ch. & Atlan. . .	10.2	10.1	9.5	6.5	8.5	10.0
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

There was thus last week a decrease of 13 per cent. from the shipments of the previous week, though this is the time of year when shipments usually increase. The decrease, however, leaves the shipments larger than in any other week since the advance in rates from 20 to 25 cents. The decrease was nearly all in grain, as the increase the previous week had been.

In the percentages carried by the different railroads there is a further decrease on the Chicago & Grand Trunk, but also on the three principal old roads, and it seems to have been the turn of the lines whose share is usually the smallest, the Nickel Plate carrying one-half more than the Michigan Central, which however carried less than any other road. The three Vanderbilt roads together had 39.5 per cent. of the whole; the two Pennsylvania roads 26.9.

At present it does not appear that the railroads are likely to get much benefit from the large quantities of wheat that may be expected soon to flow into Chicago, as the lake and canal rates are so low that export shipments are likely to take that route. But should the flour mills greatly increase their production the railroads will feel it, as they carry most of it, and the canal carries substantially none. At the current rates, however, a considerable amount of flour will go by propeller to Buffalo or Erie, to be forwarded thence by rail. Last year a little more than 20 per cent. of the total Chicago flour shipments went by lake.

Live stock rates are what the railroads please to make. Substantially there are no rates, and have been none for a long time. The question of the difference to be made between dressed-beef and live-stock rates has never been settled. The last views expressed were not so far apart as those first announced, and it seemed at a meeting a few months ago that the different railroads would come to an agreement. They did not, however, and the question has been referred to arbitration, pending which the roads are cutting off the profits of this great business, which is not only great but growing, is wholly carried by rail, and which might and should pay the railroads a large profit. There have been great changes in the course of it within a few years, during which the Grand Trunk has built up a great traffic in dressed beef, which would add materially to its profits if fair rates were obtained.

New Orleans, estimating by the value of its imports and exports, has not gained largely since the improvement of its outlet. The value of its exports the year before the war reached \$107,800,000, and it has never been so large since, though very nearly in 1869-70, according to the figures, which were in currency. For four years before the war they averaged \$97,000,000 (gold); for five years from 1870 to 1874, also \$97,000,000 (currency). They then fell off materially, averaging but \$75,000,000 for the next five years. For the last five years they have been:

1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
\$80,250,000	\$103,707,000	\$70,702,000	\$94,840,000	\$81,868,000.

These exports fluctuate chiefly with the cotton production of the Mississippi Valley. The average for the five years is \$88,000,000, which, though a sixth more than for the five years previous, is an eleventh less than in the four years before the war, and also than in the five years from 1870 to 1874, which latter, however, is probably not equal to the greater value of the gold currency in which the values are now given. Considering the very great increase in production and wealth in the South, the increase is hardly what might have been expected however, certainly not what was looked for as the effect of improving the mouth of the Mississippi, which may, nevertheless, have been of inestimable value to New Orleans by preventing a large decrease in its foreign commerce.

With regard to imports at New Orleans, they have never been very important, and they have not increased, unless we compare with the year 1878-79, when they were exceptionally small. For the four years before the war they varied from 12 to 23 millions in value, and averaged 18 millions. For the five years after the war, and in 1870, they averaged 14½ millions. They reached their maximum since the war in the next three years, averaging more than 19 millions then; but since 1874 they have reached 13 millions only in 1875, 1881 and 1882, and for the last five years have averaged 11½ millions. Only 1½ per cent. of the imports of the United States were at that port last year, and its exports are its only important foreign trade.

Cotton has been suffering further from drought, and apparently is not a good crop anywhere except, perhaps, in Tennessee and parts of Arkansas and Louisiana. Further east, however, it seems generally, while not good, to be better than last year. In Texas it is worse, and in much of the state very bad, nearly killed by two months' drought, though in the northern part of the state it is better, there having been more rain there.

The New York & New England under the Receiver has substantially given up the through traffic interchanged with the Erie at Newburg, while the previous management made it one of its chief aims to cultivate it. Indeed, it was for that that the extension to the Hudson River was built. The new management claims that this traffic costs more than the earnings from it, which, no doubt, was the case in 1883. The results under the changed policy for the seven months ending with July last are a decrease of \$117,764 (6 per cent.) in gross earnings, but also a decrease of \$240,632 (13½ per cent.) in working expenses, leaving a gain of \$122,868 (54 per cent.) over the very small net earnings of last year. So far as this goes, it shows that the road has done better without the through traffic. If large in amount this may be very valuable to a road that can be cheaply worked. But the New York & New England cannot be, at least has not been, cheaply worked. It must get about as high rates as other New England roads, and it has a tolerable traffic, having earned this year at the rate of about \$8,000 per mile per year. But its working expenses were 81.3 per cent. of its earnings this year, having been 88.6 per cent. last year. With such expenses there is not likely to be any

profit in through freight from Chicago to Boston at 25 cents per 100 lbs., not to say 20 and 15 cents.

The Chicago, Milwaukee & St. Paul has already reported its August earnings, which were \$25,000 (1½ per cent.) less than last year and \$125,000 less than its July earnings. Some effect of this year's harvest should be felt on this company's Iowa lines in August, but the larger part of its system is too far north for that. But a decrease from July to August is not usual. There has been an increase heretofore in every year since 1880. The Chicago & Northwestern reports a decrease in August of no less than \$403,700 (17 per cent.) from last year, but it has a small increase (\$37,400, or 2 per cent.) over its July earnings. It has usually, however, had a much larger gain in August over the previous July—\$243,000 last year, \$151,000 in 1882, \$332,000 in 1881, and \$68,000 in 1880, against \$37,400 this year. Thus the indications of an increase are unusually slight this year.

The St. Louis & San Francisco, on the other hand, shows the full effect of the great Kansas crops, having earned in August \$63,400 (17 per cent.) more than last year, and \$65,000 more than in July.

During September the northern roads should show the effect of the Iowa, Minnesota and Dakota crops, which, however, were very good last year as well as this.

Lake and canal rates have advanced. From Chicago and Milwaukee to Buffalo 2½ cents a bushel for corn and 2½ for wheat is paid, and from Buffalo to New York 4½ for corn and 5 for wheat, making an advance in about a month of ½ cent in the lake rate and 1 cent in the canal rate, which latter must be quite remunerative now. The lake rates remain low and the lake shipments are small, but vessel-owners are hoping for a strong demand from Duluth very soon, as it is likely to have large receipts of wheat, has comparatively little storage room, and can ship only by lake. If rates advance, shipments by rail may increase, though it is not to be expected that the railroads will carry much more than the supplies required in the interior until navigation closes.

Ocean freights have been as high as 4d. and have even touched 5d. per bushel from New York by steam to Liverpool, but recently they have fallen off greatly, and engagements have been made this week at 2½d. from New York to Liverpool, 2d. to Glasgow and 1½d. to London, and from Boston to Liverpool at 2½d. The whole cost of transportation (by water) of wheat from Chicago to Liverpool is now about 14 cents, or about equal to the rail rate from Kansas City, Omaha, or St. Paul to Chicago.

Cars of the pattern introduced by the Sixth Avenue Elevated Railroad when it was opened, with a few transverse seats in the middle and side seats at both ends, have found some favor from railroad managers for suburban traffic. The New York Central, we believe, was the first to imitate the pattern; the Erie had some built for suburban trains; the Illinois Central adopted them for its Hyde Park trains, which are urban as well as suburban; and now the Chicago, Burlington & Quincy is building some at its Aurora shops. Yet we believe that these cars are not popular with passengers. In one case, certainly, the "commuters" petitioned the railroad company to give them the old-fashioned car. The point in their favor is that they facilitate entering and leaving a car, which may cause a pretty long wait when a large number get off and on at a way station. The transverse seats on some of the suburban trains are reversible. On the elevated railroad they are not, but arranged in pairs facing each other so that there is an intermingling of knees which is extremely unpleasant. Where the interval between trips is so short that there is not time to turn the seats, as on the elevated railroads, it would seem better to have all the seats on one side of the car face the same way, and so give room for disposing of one's feet and legs without interfering with those of the passenger in front. Just as many would ride backward then as do now, but they would all ride more comfortably.

An engineer wants to know if it does not show the decadence of the engineering profession when one of its most distinguished members, even a Past President of its representative society, keeps a "pool room" on Broadway. That we may know that this is true, he refers us to the number—No. 246.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Baltimore & Ohio.—This company's South Branch road is completed from Green Springs, W. Va., southward to Romney, 16 miles.

Camden & Atlantic.—Extended from South Atlantic, N. J., to Long Point, 2 miles.

Milwaukee, Lake Shore & Western.—Extended from Presque Isle River, Mich., west to Wakefield, 19 miles.

Missouri Pacific.—The Lebanon Branch is extended from Cooper, Mo., south to Bagnell, 5 miles.

Morgan's Louisiana & Texas.—A branch is completed from Baldwin, La., northwest to Cypremort, 15 miles.

New York, Philadelphia & Norfolk.—Extended from Accomac, Va., south to Pungoteague, 8 miles.

St. Paul, Minneapolis & Manitoba.—A branch is completed from Larimore, Dak., northwest to Park River, 36½ miles.

This is a total of 101½ miles of new railroad, making 2,344 miles reported to date for the current year. The total

track reported laid to the corresponding date for 13 years past is as follows:

	Miles.		Miles.
1884.....	2,344	1877.....	1,171
1883.....	3,550	1876.....	1,467
1882.....	6,668	1875.....	702
1881.....	4,018	1874.....	1,006
1880.....	3,196	1873.....	2,284
1879.....	1,798	1872.....	4,498
1878.....	1,160		

These statements include main track only, no account being taken of second tracks or other additional tracks or sidings.

The new track reported to date is less than for any year since 1879, and is not much over one-third of that given for 1883. The mileage is very nearly the same as in 1873, although greater than that of any year between 1873 and 1880. No very great increase is probable for the rest of the year.

Way-Bills and Their Examination.

[From Marshall M. Kirkman's forthcoming work on "The Theory and Practice of Collecting Railway Revenue Without Loss."]

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To secure satisfactory results, the methods of accounting in great institutions are adjusted with the utmost nicety. The importance of the various parts are not relatively the same, but no one of them can be omitted, or its use perverted, without injury to the whole. A perfect organization has, perhaps, never been effected upon a railway. Where the conditions are otherwise favorable, the ignorant and inexperienced continually rise up to destroy or render nugatory the efforts of those who understand the necessity of such an organization, and the manner of effecting it. In some cases it comes from those whose interests are opposed to an effective organization; while outwardly professing zeal in the work, they avail themselves of every opportunity to create divisions and exaggerate difficulties. The accounting officer is thus from various causes prevented from realizing the full fruition of his work. One of the greatest obstacles, however, in the way of adopting or enforcing a perfect system of accounts is the innumerable incompetents whose combined inertia has to be overcome. They infest the surface everywhere like common ants, and the horizon which they are able to scan is never greater than that of their prototype. Yet the very contractedness of their vision makes them confident in suggestion and fearless in execution. Unable to see more than a fragment of a subject their action is characteristically based only on what they personally observe.

THE FREIGHT WAY-BILL—ITS USES AND VALUE, AND THE RETURNS CONNECTED THEREWITH.

The inability to comprehend the full value of the various blanks used by railroad companies was never more clearly evinced by the class of people just referred to than it is in connection with the way-bill or manifest of property transported. This important blank is as valuable as a bank note or draft in the evidence of indebtedness that it affords; but in order to maintain this value it is necessary that certain things in connection with it should be observed, just as they are observed in connection with a note or draft. The great thing to attain in connection with the way-bill is to secure its preservation, the recording of it upon the books and in the returns, and the insuring its correctness. Of these the preservation and return of the way-bill is the most important. It is not necessary to say that it will be suppressed, or that it has ever been suppressed by parties who could gain thereby. It is enough to say that where proper precautions are not observed there is no reason why it cannot be suppressed. All that is necessary, under certain circumstances, is the co-operation of two men. This suppression, when it occurs, means the destruction of an evidence of indebtedness without which the debt cannot be collected. This debt is not against the public, but against an employé of the carrier. The loss is thus supplemented by the demoralization engendered by a criminal act. The way-bill exhibits the details of each consignment, and the particulars connected with its carriage and transfer to the warehouse or consignee at destination. It is the carrier's note of hand against the agent who collects his earnings, and unless its safety is assured all other methods of accounting, connected with the freight business, are incomplete. To secure this result it is desirable that each car containing goods should be accompanied by a way-bill, regularly numbered,* dated and copied by the forwarding agent, and containing a correct list of the property in the car, the quantity thereof, to whom consigned, the rate charged, the earnings accruing thereon, and the amount of advances made. This bill passes from the hands of the agent making it into the hands of the train-master and conductor, and before it reaches its destination has, in the majority of cases, been seen and handled by many people unknown to each other, and between whom no concert of action is likely to exist. Any one of these people may make a record of the bill and the contents of the car for the information and use of the accounting department if desired. The consciousness that this is so tends to prevent any effort to tamper with or suppress the bill. The risk is too great. Thus is the good faith of the parties making and receiving the bill in a measure assured. In no other way can this safeguard be so certainly and easily attained. It would seem, therefore, that every one would co-operate to secure the send-

* Where two or more sheets are required to describe the freight contained in a car destined between two points, only one number should be given to such sheets, but each sheet should be lettered commencing with A, and the footings should be carried forward from the first sheet to the last, in their order, so that while there would be several sheets there would be but one way-bill and one total. This should be the rule except where a separation of the contents of the car on different bills renders it impossible to observe it.

ing of the bill forward in each instance with the freight. Yet such is not the case. This necessary provision, so essential as a corrective measure and so necessary to insure trustworthy accounting, is habitually disregarded. Various excuses are given for the omission. Not one of them, however, possesses any real value. The one most generally made, that there is not sufficient time in which to make a bill, is only measurably true. A way-bill may, in the majority of cases, be made for each car of freight during the time in which the goods are being examined, weighed and loaded. If necessary, each consignment may be billed as it is loaded. It is not necessary to wait until the car is full. As fast as a consignment of freight is loaded it may be entered upon the way-bill, and when the last entry has been made the bill may be numbered and an impression taken of it before the engine can be coupled on to the vehicle. The trouble is that the way-bill is not, as a rule, commenced until the car is loaded. This is wrong. It should, wherever possible, progress item by item, as the property is placed in the vehicle. To render this practicable, the entries made by the warehouseman may be made on tablets, a separate tablet being used for each consignment. The tablet, when completed, should be handed to the bill clerk, and the information it contains entered on the way-bill by him, and the extensions made while waiting for the next tablet. In this way the work would progress uniformly, and the bill be completed at the same moment that the car was loaded. If some such simple method as that here suggested were observed, the excuse that a way-bill cannot be sent with the car without delaying the latter would, in the majority of cases, possess no value, even as an excuse. The reason, too often, that the way-bill cannot be sent forward with the car, is not that there is insufficient time, but that the agent does not insist upon it or is so lacking in administrative ability that the work of the station is not systematized and kept up as it should be. The difficulty, moreover, is exaggerated somewhat by the disposition of railways to hold on to old forms with one hand, while taking up others still more impracticable or complicated with the other. Thus the tally-book, in which all consignments are entered, is still largely used for local traffic. Its use renders it necessary that the check clerk should retain possession of the book until the car is loaded, consequently it is not accessible to the bill clerk until after this is accomplished. Formerly every clerk was expected and required to familiarize himself with the classification and rates; he was thus able to make the extensions at the same time that the entry was made on the bill. Now experts are employed at large stations whose chief duty it is to determine and enter the rates. This official may be necessary, and I do not question his value, but he delays the work many instances. Where tablets such as those described are used they should be consecutively numbered and after being used by the bill clerk may be carefully collected and bound for preservation; they thus become a consecutive record, quite as valuable as the blotter now in vogue, while their use will enable the bill clerk to keep pace with the gang of men engaged in loading the property. It may be that the results sought to be achieved by the use of these tablets may be obtained more effectively in other ways. The form is not material; the object is everything. What is needed is some simplification of the present methods whereby a properly numbered bill may be sent forward with the car without any detention to the latter. There is no insurmountable obstacle in the way. It is simply a question of ways and means, and need not necessarily involve inconvenience or additional expense. Instances will occur where it will be found impracticable to use the tablets in the manner described. This will be the case where the goods for a large number of consignees destined to a particular station lie piled promiscuously in the place allotted in the warehouse at the forwarding station. Freight thus stored in advance is loaded very rapidly into the car, the various consignments not always being kept separate or in order. In such cases the tablets might be used, but not in the manner suggested. Where freight is thus stored in advance of loading it is practicable to enter the goods on the way-bill before they are put into the car. The practice is unusual, but every available device must be adopted in order to accomplish the result desired. One obstacle in the way of the simultaneous making of the way-bill with the loading of the freight is the distance the bill clerk usually is from the car. The time lost in sending the books and information connected therewith backward and forward is too valuable to be thus wasted. This fault it will be found necessary to remedy as business increases at the various stations, and the necessity of rapid and harmonious action between the different parts of the machine becomes necessary. Bring the bill clerk and the tally clerk together; let the work in all its parts be carried forward simultaneously. Instances will arise where whole car-loads, or even train-loads, of freight will be delivered at one time by connecting lines, to be forwarded without reloading. In such cases no previous knowledge can exist in reference to the property, and no bill can, consequently, be prepared for it, and to hold the goods until bills can be made would in many cases cause detention. Instances of this kind are exceptional, but they will occur. In such cases the remedy is to have the freight billed through by the delivering company, or, by co-operation between the competing lines adopt whenever practicable such form of transfer statement as will permit the company receiving the property to use the statement as a way-bill, by simply numbering and dating, and inserting the local rates, charges, etc. The best way is to have the freight billed through. This, however, in many cases will not be practicable. A substitute must therefore be found. Where freight is transferred at junctions to be rebilled it is

accompanied by a receipt or expense bill in duplicate, which latter the receiving company signs and returns. There is no insurmountable reason why this receipt should not be in the general form of a way-bill, to be used as such by the receiving company. One objection to this plan is that in some cases there will be a great many receipts for each car, instead of the whole being massed in one statement. This would render it impracticable to make use of such statements as a way-bill, as there should not (except for reasons already given) be more than one way-bill for freight contained in a car forwarded from any particular station to any other station.

Under the most favorable circumstances there will be cases, though few and far between, where it will not be practicable to send with the car a way-bill of the usual form containing full particulars of the property and the charges thereon, without delaying the freight. For such cases a substitute must be provided for temporary use. This substitute must not, however, be a memorandum merely. It must be numbered and dated; and this number and date must be the same as that which is to be used in making the way-bill proper. It must give the points from and to, and state generally the contents of the car, such as merchandise, machinery, agricultural implements, etc. The blanks used for this purpose might be called "Advanced Way-Bill"; i. e., they are made in advance of the regular way-bill and go forward with the car. Wherever forms of this description are used, they should be printed and bound in book-form with a stub (copy) attached, so that the particulars of each may be preserved by the billing agent for subsequent information. Not only should the "Advance Way-Bill" be numbered by the agent, but it should also have a consecutive number printed on its face, and the agent issuing it required to render an account of each blank furnished him. The advance way-bill should be attached to the way-bill proper on receipt of the latter by agent at destination. It will thus be preserved and will reach the accounting officer simultaneously with the way-bill proper.

The various methods suggested here for meeting the difficulties connected with the billing of freight are perhaps not the best that can be instituted. Others more effective will very likely in the course of time be devised. The only point claimed is that they are practicable, and in the absence of something better afford a solution of a difficulty that destroys the connected system of railway accounts, and threatens thereby the revenues of the carrier.

The one essential thing is that a regularly numbered way-bill should be forwarded with each car, and that the way-bill should be finished in time to prevent delay. It must be numbered, dated, copied, and whenever circumstances do not render it absolutely impossible, it should contain a full statement of the property and the charges thereon. The practice of sending what is generally termed a memorandum way-bill (i. e., a way-bill that is not numbered and does not contain a description of the property) with the freight, the way-bill following later by passenger train, is indefensible, and should not be permitted under any circumstances. The return made by the conductor of the number of each car containing freight, and the record that he may make of its contents and of the way-bill, or that may be made by any one of the many persons through whose hands the car passes *en route*, will prevent the way-bill being tampered with. When a way-bill reaches its destination it should be at once entered on the proper book, and when the goods are delivered a receipt must be taken in the place provided therefor. We thus have a record of the way-bill at starting point, in the hands of the conductor, and at destination, with glimpses of it as it passes through the hands of yard-masters, transfer agents, clerks and others *en route*. The theory accepted and acted upon by the superintendent, that the check of one agent upon another is sufficient, is absurd. The fact that only one way-bill or ten way-bills are reported as received from a particular station, is not conclusive evidence that others have not been received unless proper measures have been taken to demonstrate the fact or to prevent misrepresentation. The most important safeguard that can be devised in connection with the due preservation of the way-bill is a return from the conductor in connection with a report of the car. This return, however, is not always practicable; indeed it involves considerable labor and expense, but if not carried out in every instance it may be enforced at infrequent periods, or similar reports may be exacted from yard-masters, transfer agents or others, in regard to cars contained in trains which pass through their hands. These tests would serve to demonstrate whether way-bills for freight were duly returned by agents whose duty it was to perform this service, and whether the way-bill contained, moreover, a correct account of the property and the charges thereon. In this connection it is proper to say that agents and other subordinate officials are not purposely responsible for the condition of affairs that permits the forwarding of a car without a way-bill. Generally speaking the responsibility may be said to rest in a higher quarter. Agents as a rule use to the best advantage the implements that are provided them. If these implements are inadequate or defective they are powerless in the matter.

In those cases where the way-bill is forwarded by passenger trains (the car being accompanied with an advance way-bill merely), the former will, as a rule, reach the receiving station several hours, sometimes days, ahead of the freight. This is one of the compensating advantages that attends the practice of forwarding way-bills in this way. The receipt of the way-bill before the arrival of the freight enables the agent to make out the necessary receipts (expense bills) and enter the bill on the record books in anticipation of the coming of the freight, so that on the arrival of the latter the

way-bill can be used without occasioning delay in checking the property as it is unloaded, and as the receipts have already been written, the freight can be delivered to consignees without a moment's delay. This gain in time and facility is of considerable benefit, and is, in some cases, a saving in expense to the carrier. It affords the receiving agent an abundance of time in which to perform the clerical work incident to the receipt and delivery of the freight when he would otherwise be comparatively idle. He is thus able to utilize his force to better advantage, and can, moreover, avoid the delay that would occur in delivery of the property if he were compelled to copy the way-bill on the record books and write up the receipts after the arrival of the goods. This is a matter of importance at large towns where time is a consideration and the facilities must be utilized to the utmost. At smaller places it is of less consequence. Where the practice is observed of writing up the records and receipts ahead of the arrival of the goods, great care must be exercised in correcting any errors or omissions in consequence of performing the clerical work before the actual correctness of the way-bill has been demonstrated in its material parts by comparison with the freight as received and unloaded from the car. Theoretically, agents are not supposed to know that freight is to be received until it is actually unloaded. Practically, however, where bills are received in advance, they may anticipate its arrival in the manner described, and thus save to the company and to the consignees the benefits arising therefrom.

In order to verify the accuracy of the returns, and for the purpose of seeing that irregular practices do not creep into the service, traveling auditors should, as opportunity occurs, make careful record of way-bills accompanying cars loaded with freight, and afterward compare such records with the returns made by the agents whose duties require them to make returns for said cars. These tests should be made especially of all advance way-bills and others of an irregular character. All the particulars given on such way-bills must be noted, and if possible the contents of the car examined for the purpose of ascertaining what the same consists of. The information thus acquired must be referred to the proper accounting officer, to be by him compared with the returns. Also, whenever it is considered necessary or expedient, returns of cars passing particular points should be made to the proper officer by officials especially directed to perform such service. These returns must show what the cars contain, whether the same agrees with the way-bill, where from, where to, date and number of way-bill, and, in the case of regular way-bills, the amount of the charges. Reports of this kind may also be exacted at pleasure from conductors of property hauled in their trains. If occasional returns of this kind are exacted, and are afterward carefully compared with those made by agents in reference to the cars they refer to, it will serve to prevent any omission or suppression of the accounts, or make known the fact in the event any such irregular practice is being attempted. However, the thorough way would be to exact returns from conductors and officials at intermediate points, of the contents of each and every car hauled, and the particulars of the way-bill accompanying the same. Such returns, compared with those made by agents, would throw around the latter a perfect safeguard. But this system would be cumbersome and expensive, and the same results may, in a measure, be achieved if traveling auditors will exercise vigilance and tact in procuring information, and comparing the same with the returns made by agents. The opportunity afforded for acquiring information of this kind from freight conductors and others is very great. These sources of information may be supplemented by returns of agents or yardmen at transfer or other intermediate points. In this manner the same results are, in a measure, achieved that would be accomplished by a continuous and more elaborate system. When it is practicable for a company to do so, however, the proper accounting officer should exact intermediate returns in reference to way-bills and contents of all cars hauled. These returns should be made by conductors as a rule; but if it is for any reason desired, they may be made by employes at switching-yards, junctions, or transfer points. These intermediate reports should be used, as already indicated, to verify the work of the forwarding and receiving agents.

EXAMINING THE EXTENSIONS AND FOOTINGS OF WAY-BILLS AND THE REASONS THEREFOR.

When a way-bill reaches its destination it should be carefully examined for the purpose of ascertaining whether it is right as regards quantity, condition, classification, rate, local charges, and footings; this examination must be so intelligent and searching that no possible error or omission made by the forwarding agent can escape notice or correction. Agents and their assistants in consequence of inexperience, and on other accounts, in many instances will be found woefully lacking in knowledge of the rules of billing, the application of classifications, and the proper use of regular and special rates. In consequence of this it is necessary that traveling auditors should possess a practical as well as a theoretical knowledge of such matters, so that they may be able, so far as their opportunities permit, to explain the classifications, tariffs, rates, and methods of handling business. As it will be impossible for them to familiarize the agent with every detail, they must explain the classifications and tariffs to him generally, so that he may know where to look for the information he requires. The necessity of the agent studying the classifications and tariffs so as to be familiar with all their minute requirements must be insisted upon in every instance. Without such knowledge the interests of the company are constantly jeopardized through the errors and omissions which will occur. This fact is so well understood that it first suggested the practice of examining

the classifications, rates, extensions and footings of way-bills at the headquarters of the company.*

There are so many general and special reasons why such an examination should be made, that it seems neither necessary nor possible to enumerate them. In the first place, the classifications, tariffs, and particulars of billing, are so prolix and complicated that much time, patience and ingenuity are required to properly instruct new agents and keep those more experienced fully advised. The Traveling Auditor, whose visits are few and far between and necessarily short, cannot do more than outline the work. The technicalities and niceties of detail, upon which immense differences in earnings hinge, cannot be even hinted at. Moreover, new agents are all the time being installed, and many of them are lacking in practical experience. Their knowledge of the peculiarities of the station to which they are appointed is in many respects meagre; in all cases it is superficial. They are, in the majority of cases, not fully qualified to make a way-bill, for the reason that its conditions are at best but imperfectly understood by them. It is possible that a bill, if going to a station where there is an old and experienced agent, may be examined, and properly corrected in the event it is wrong. But suppose that both agents are inexperienced; in such an event the error would be accepted as the correct interpretation of the classification or tariff, and would thus become an integral part of the system. It is only by examinations at headquarters that mistakes of this kind can be remedied. Where examinations are thus made they will have the effect to compel the receiving agent to exercise constant vigilance in correcting errors, for the reason that he knows he will be held responsible for any undercharges that may occur. He is thus screwed up to the highest point of efficiency. In the event such examinations are not made, it is hardly to be supposed that the undercharges will in every case be discovered or corrected by the receiving agent. The direct incentive will be wanting, while he will avoid much labor by neglecting the duty. This neglect will never be known, as it is hardly to be expected that shippers will report errors that inure to their advantage. On the other hand, we may be reasonably certain that they will, in the majority of cases, report those that operate against them. The examinations of way-bills must be continuous, not only to keep the agents advised, but that the examiner may himself be thoroughly posted in reference to his duty. The freight traffic of a railroad is like a thread that must be followed continuously if we would keep ourselves informed of the innumerable details and the countless changes that follow its course without a moment's cessation from one year's end to another. If the thread is lost or broken we can never feel certain that some necessary and valuable detail has not been overlooked or forgotten. One useful purpose served by the examination of way-bills is to prevent errors in footings. To be sure, such errors might inure to the benefit of the company, but it is perfectly plain also that they may inure to the benefit of the agent. In the former case there would be a direct personal incentive to correct the mistake. This incentive would be lacking in the latter case. Moreover, in connection with mistakes of this kind, no intent would be apparent, and the error, even if discovered by the company subsequently, could not be considered as conclusive of intended wrong, so that the risk to the person benefited in such case is, in any event, very small. Neglect to examine way-bills at headquarters multiplies immensely the number of overcharges to be refunded by vouchers or otherwise. These swell the work of the Claim Department, and serve to harass shippers, who are naturally impatient of errors of this kind. The most suggestive thing under such circumstances, however, is that for every overcharge the carrier is called upon to refund, he may be certain, according to the law of averages, that there has, in the case of some other shipment, been an undercharge involving a direct loss to him that will never be corrected. The neglect of carriers to examine the extensions of way-bills at headquarters is based upon the theory that, in the event the person making the bill errs, the mistake will be discovered and corrected by the receiving agent; but if he is equally ignorant, the theory falls to the ground, and we are certain, from the innumerable changes that are constantly occurring, that this conjunction of circumstances will be of frequent occurrence. It presumes, moreover, that work will be voluntarily performed that may just as well be avoided. It also forgets that in the interpretation of classifications and tariffs the local officials, unless experienced and of superior capabilities, are often inveigled into construing them in the interest of shippers, to the detriment of the carrier, without being conscious that they are committing an error. In racing vernacular, it is the company against the field. Still other reasons might be given, if they were necessary, why carriers should examine the details of every traffic way-bill made with as little delay as possible, and should make the examination searching and continuous. No possible expense attending such labor would warrant its neglect for a single instant.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Chicago & Eastern Illinois, annual meeting, at the office in Chicago, Oct. 7. Transfer books close Sept. 25.

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 1. Transfer books close Sept. 21.

Northern Pacific, annual meeting, at the office in New York, Sept. 18.

*To enable this examination to be made without delay a duplicate of each way-bill is sent by the agent to the proper officer by the first passenger train after the original bill has been made. Where a copying press is used, a tissue impression of the way-bill is forwarded to headquarters; in other cases a duplicate is written upon a blank provided for the purpose.

Dividends.

Dividends have been declared as follows:

Boston & Albany, 2 per cent., quarterly, payable Sept. 30, to stockholders of record on Aug. 30.
Delaware & Hudson Canal Co., 1½ per cent., quarterly, payable Sept. 10, to stockholders of record on Aug. 28.
Fort Wayne & Jackson (leased to Lake Shore & Michigan Southern), 2½ per cent., semi-annual, on the preferred stock, payable Sept. 1.
Sunbury & Lewistown (leased to Pennsylvania Railroad Co.), 3 per cent., semi-annual, payable Oct. 1, to stockholders of record Sept. 15.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

Road-Masters' Association of America, annual convention, in Indianapolis, Ind., on Wednesday, Sept. 10.
Association of American Railroad Superintendents, semi-annual meeting, in Boston, on Tuesday, Sept. 16.
National Association of General Passenger & Ticket Agents, semi-annual convention, in Boston, on Tuesday, Sept. 16.
New England Railroad Club, first monthly meeting for the season, at the rooms in the Boston & Albany station in Boston, on Wednesday, Sept. 24.
New England Road-Masters' Association, annual convention, at White River Junction, Vt., on Wednesday, Oct. 8. A full programme and announcements will be found in another column.

General Time Convention, fall meeting, at the Continental Hotel, Philadelphia, on Thursday, Oct. 9.
Southern Time Convention, fall meeting, at No. 46 Bond street, New York, on Wednesday, Oct. 15.
American Street Railway Association, annual convention, in New York, on Wednesday, Oct. 15.

Michigan Passenger Agents' Association.

A meeting of passenger agents was held in Detroit last week for the purpose of reviving the old Michigan Passenger Agents' Association. There was a considerable attendance and a general discussion as to the advantages to be obtained by the organization, which led to a further discussion of the question of allowing special rates. On the latter point no conclusion was reached, but it was decided to renew the organization, and the proper officers and committees were appointed and arrangements made for future meetings.

Western Society of Engineers.

The 192d meeting was held on Tuesday, Aug. 19, in Chicago, President Cregier in the chair.

Upon ballot, Mr. John Allison Porter was elected a member.

The Secretary announced the reception of a photograph-likeliness from Mr. Albert F. Robinson.

Mr. Liljencrantz, for the Committee on Revision of Constitution and By-Laws, reported progress and presented several amendments for consideration. These were discussed separately and the matter was referred back to the committee.

Association of American Railroad Superintendents.

The eighth semi-annual meeting of this Association will be held at Young's Hotel, Boston, Mass., on Tuesday and Wednesday, Sept. 16 and 17, 1884. Meeting will be called to order at 10 a. m.

The business to come before the meeting is as follows:

1. The election of new members.
2. Honorary members proposed.
3. Report of Committee on Conference with Committee of General Time Convention. Chairman—W. H. Stevenson.
4. Final action upon train signals.
5. The consideration of the 24 o'clock system of standard time.
6. The consideration of such other business as may be presented.

A circular from the Secretary says: "Through the courtesy of the Eastern Railroad Co. and the Mount Washington Railway Co., special trains from Boston to the summit of Mount Washington have been placed at the disposal of the members of the Association."

"The train will leave Boston on Thursday, Sept. 18, at 6 a. m., passing through North Conway and the Crawford Notch to Fabyan's, thence to summit of Mount Washington. Dinner will be served at the Summit House. Train will return to Boston in the evening. Members who desire to make a longer stay in the mountains will be furnished with passes."

"Your presence at this meeting will materially assist in giving weight to the conclusions of the Association."

"In order to complete the arrangements for the meeting and excursion, it is important to know as near as possible the number who will attend."

Members are therefore requested to notify the Secretary, Mr. Waterman Stone, at Providence, R. I., as soon as possible.

Grand Trunk Railway Insurance & Provident Society.

General Manager Hickson of the Grand Trunk Railway has issued a circular announcing the amalgamation of the Grand Trunk Employees' Insurance Fund and the Great Western Provident Society under the name of the Grand Trunk Railway Insurance & Provident Society. All the employees of either road who, on July 1, 1884, were contributors to either fund, become members of the new society and enjoy all its privileges. The new society provides a benefit of \$3 a week in case of sickness as well as accident, instead of the latter only as heretofore. The benefits payable in case of death range from \$250 to \$2,000, divided into six classes. The directors of the Grand Trunk grant aid to the society to the amount of \$10,000 per annum, and in addition to this there is a balance in hand of \$30,000 to the credit of the Grand Trunk Employees' Insurance Fund which will become a reserve fund for the society.

ELECTIONS AND APPOINTMENTS.

Bangor & Portland.—At the annual meeting of this company, held in Portland, Pa., Aug. 9, the following directors were chosen: John I. Miller, Jonathan Moore, Portland, Pa.; Joseph Bray, Dr. J. Buzzard, J. E. Long, Bangor, Pa.; Conrad Miller, Blairtown, N. J. At a subsequent meeting of the board, Mr. C. Miller was re-elected President and General Manager; Geo. W. Mackey, Secretary and Solicitor; John I. Miller, Treasurer.

Central Iowa.—At a meeting of the board held in New York, Sept. 3, Harvey Kennedy and E. H. Perkins, Jr., were chosen directors to fill vacancies.

Chicago & Eastern Illinois.—Mr. Stewart Barnes has been appointed Superintendent of Bridges on this road. He recently held the same position on the Ohio Central.

Chicago & West Michigan.—Mr. H. Carpenter has been appointed Assistant General Freight Agent of this road. He had previously held the position of General Freight Agent of the Boston, Concord & Montreal.

Denver & Rio Grande Western.—The following circular from W. H. Bancroft, Receiver of this road, is dated Salt Lake City, Aug. 27:

"The following appointments have been made: Mr. S. W. Eccles, General Freight and Passenger Agent; Mr. J. H. Bennett, Auditor."

"Agents and conductors will continue to send their reports to Mr. E. R. Murphy till Aug. 31, and such reports thereafter as pertain to August business. On and from Sept. 1, except as above specified, all reports will be sent to Mr. J. H. Bennett, Auditor, Denver, including car reports."

Eastern.—Mr. Bradford Angell has been appointed General Baggage Agent of this road. He was formerly Assistant Superintendent.

Fremont, Elkhorn & Missouri Valley.—Mr. Charles M. Lawler has been appointed General Superintendent of this road, now operated under its separate organization, although controlled by the Chicago & Northwestern. Mr. Kingsley C. Morehouse has been appointed General Freight Agent, and Mr. John R. Buchanan, General Passenger Agent.

The following appointments on this road, to take effect Aug. 31, have also been announced: William F. Van Bergen, Ticket Auditor at Chicago; William S. Hartwell, Freight Auditor at Chicago; James E. Marsh, Car Accountant at Chicago; Marshall M. Kirkman, Comptroller at Chicago. These are also officers of the Chicago & Northwestern.

Louisville, New Albany & Chicago.—Mr. William S. Baldwin has been appointed General Passenger Agent of this road, to take effect Sept. 1. Mr. Baldwin previously held a similar position on the Buffalo, New York & Philadelphia road.

Louisville, New Orleans & Texas.—Mr. J. S. Davant has been appointed General Freight and Passenger Agent. He has been on the Port Royal & Augusta road for some time.

Maine Central.—Mr. Bradford Angell has been appointed General Baggage Agent of this road. He holds the same position on the Eastern Railroad.

Missouri Pacific.—The jurisdiction of Mr. A. M. Hager, Superintendent of the Eastern Division of this road, has been extended to cover the Western Division, including the branch to St. Joseph, with headquarters at Sedalia, Missouri.

Mr. George C. Knowlton has been appointed Assistant Superintendent of the Western Division, with headquarters at Kansas City.

Northern Adirondack.—The officers of this company are as follows: John Hurd, President, Bridgeport, Conn.; C. B. Hotchkiss, Vice-President, Bridgeport, Conn.; M. Callahan, Superintendent, St. Regis Falls, N. Y.; A. C. Allison, General Freight and Passenger Agent, Moira, N. Y.

Ohio Central, River Division.—Thos. R. Sharp, Receiver, announced on Aug. 25, that Hugh Longest had been appointed Superintendent. J. Thomas Budd has been appointed General Freight and Passenger Agent, with office at Charleston, Kanawha Co., W. Va.

Rochester & Pittsburgh.—Mr. C. W. Mills has been appointed Superintendent of Motive Power in place of J. P. Hovey, resigned.

Sioux City & Pacific.—The following appointments on this road, to take effect Aug. 31, have been announced: William F. Van Bergen, Ticket Auditor at Chicago; William S. Hartwell, Freight Auditor at Chicago; James E. Marsh, Car Accountant at Chicago; Marshall M. Kirkman, Comptroller at Chicago.

Union Pacific.—At a meeting of the board in New York last week Mr. S. R. Callaway was appointed General Manager in place of S. H. H. Clark, resigned. Mr. Callaway was for a number of years Superintendent of the Detroit & Milwaukee, and more recently of the Chicago & Grand Trunk. A few months ago he was appointed Assistant to the President of the Union Pacific.

The official order on this appointment is as follows, dated Boston, Aug. 28:

"At a meeting of the Executive Committee of the board of directors, held in New York the 27th instant, the following votes were passed:

"*Voted*.—That the resignation of Second Vice-President and General Manager Clark be accepted, to take effect from the 1st proximo, and that it be referred to the next meeting of the directors, to be held upon Sept. 17, to take such action thereon as may be proper and expedient."

"*Voted*.—That Mr. S. R. Callaway be appointed Second Vice-President and General Manager, to take effect from the 1st proximo."

"In accordance with the foregoing votes, Mr. S. R. Callaway will assume the duties of Second Vice-President and General Manager, in place of Mr. S. H. H. Clark, resigned, on Monday, Sept. 1. He will be respected and obeyed accordingly."

Wadena & Park Rapids.—The officers of this new company are as follows: Col. Crooks, of St. Paul, President; J. L. Wolverton, Minneapolis, Secretary; E. S. Carl, of Wadena, Treasurer.

PERSONAL.

—Mr. E. W. Jordan, Train-master of the Rochester & Pittsburgh road, has resigned his position.

—Mr. R. Sherburne has resigned his position as Master Mechanic of the Buffalo Division of the Rochester & Pittsburgh road.

—Col. John H. George has resigned his position as General Counsel for the Boston & Lowell Co., and will remove from Concord to Boston.

—Mr. J. P. Hovey, Superintendent of Motive Power of the Rochester & Pittsburgh road, has resigned that office, after holding it only a few months.

—Mr. C. E. Garey has resigned his position as Master Car-Builder of the New York & Harlem Division of the New York Central & Hudson River road.

—A Chicago dispatch reports that Mr. J. A. Grier has resigned his position as General Freight Agent of the Michigan Central Railroad. No reasons for this action are given.

—The resignation of Mr. Charles Francis Adams, Jr., as Trunk Line Arbitrator has been accepted. Mr. Adams resigned on account of the pressure of his duties as President of the Union Pacific.

—It is reported that Mr. A. B. Southard, lately Traffic Manager of the Louisville, New Albany & Chicago road, has been offered an important position on the Cincinnati, Indianapolis, St. Louis & Chicago road.

—Col. Litt C. Jones died at his residence in Atlanta, Ga., Aug. 27. He had been connected with the Western & Atlantic Co. for a number of years, serving in the general freight office, as local agent and lately as claim agent.

—Mr. S. H. H. Clark has finally retired from his position as General Manager of the Union Pacific Railroad. Mr. Clark tendered his resignation some time ago on account of ill health, but at the request of the board of directors has continued in position until the present time. Mr. Clark will retire from active business altogether, it is understood, at least for a time, until his health is fully restored. He has been on the Union Pacific for 18 years, filling in that time many positions.

—Mr. Henry M. Phillips, a well known lawyer of Philadelphia, died in that city August 28. Mr. Phillips has retired from active practice for some years but still gave much attention to his duties as a director of the Pennsylvania Railroad Co., which office he had held for a number of years, and as a member of the Philadelphia Park Commissioners and the Board of City Trusts. While in active practice he had acquired a high reputation as a corporation lawyer.

TRAFFIC AND EARNINGS.**Railroad Earnings.**

Earnings for various periods are reported as follows:

Eight months ending Aug. 31:

	1884.	1883.	Inc. or Dec.	P.c.
Chi., Mil. & St. P.	\$14,204,000	\$14,369,431	D. \$165,431	1.1
Chi. & Northw. t.	14,532,599	15,452,946	D. 920,347	5.9
St. L. & San Fran.	2,918,700	2,346,200	I. 572,500	24.4

Seven months ending July 31:

Seven Months ending July 31.					
Norfolk & West.	\$1,432,337	\$1,428,623	I.	\$3,704	0.3
Net earnings...	535,072	598,009	D.	63,837	11.0
N. Y. & N. England	1,807,712	1,985,465	D.	177,753	6.0
Net earnings...	340,274	226,396	I.	123,878	54.0

Month of July:

Net earnings...	265,329	251,904	I.	13,335	5.3
<i>Month of July:</i>					
Eastern.....	\$346,285	\$334,728	I.	\$11,757	3.3
Net earnings...	160,910	142,726	I.	18,184	12.7

Month of August:

Net earnings...	76,321	80,972	D.	20,649	21.0
N. Y. & N. England	278,217	320,152	D.	43,935	13.7
Net earnings..	55,091	64,079	D.	8,988	14.0
West Jersey...	178,532	178,147	I.	385	0.2
Net earnings...	80,115	80,519	D.	9,404	10.4

Third week in August:

Chi., Mil. & St. P.	\$1,826,000	\$1,851,279	D.	\$25,209	1.4
Chi. & Northwest	1,999,700	2,403,400	D.	403,700	16.8
St. L. & San Fran.	432,800	389,400	I.	63,400	17.1

Third week in August:

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

Grain Movement.

For the week ending Aug. 23, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and shipments at the seven Atlantic ports have been, in bushels, for the last nine years:

Year.	Northwestern receipts.		Northwestern shipments.		Atlantic receipts.	
	Total.	By rail.	Total.	By rail.	Total.	By rail.
1876	4,280,052	3,271,549	1,573,058	48.2	3,371,296	3,371,296
1877	4,985,532	4,710,509	1,146,301	24.3	4,846,140	4,846,140
1878	8,780,893	6,719,785	1,275,462	18.7	7,189,228	7,189,228
1879	7,428,249	5,701,801	1,956,363	34.0	7,588,239	7,588,239
1880	8,555,570	6,556,832	2,210,638	31.7	7,328,971	7,328,971
1881	8,110,023	6,294,012	2,545,079	40.4	5,590,946	5,590,946
1882	6,474,275	5,152,651	2,769,921	53.8	5,438,413	5,438,413
1883	7,616,546	5,906,165	2,322,458	39.3	4,855,821	4,855,821
1884	7,905,391	4,985,498	2,220,774	44.6	3,682,789	3,682,789

Thus the receipts of the Northwestern markets for the week this year were less than the corresponding weeks of 1878, 1880 and 1881, but more than in the other year, and 379,000 bushels (5 per cent.) more than last year. They were, however, 550,000 bushels less than in the previous week of this year, the falling off being chiefly at St. Louis and Peoria. The receipts at Detroit were phenomenally large, indicating that the Wabash is carrying an unusual amount to that terminus, though it may be partly due to deliveries of Michigan winter wheat, which there has been time to thresh and market now. The decrease was wholly in wheat.

The shipments of these markets for the week were smaller than in any corresponding week since 1877, and they were 1,079,000 bushels less than last year. They were also 686,000 bushels less than in the previous week of this year, but with that exception were the largest since June. The rail shipments were less than in the corresponding weeks of three previous years, but were decidedly large, and they are the largest of this year since the expiration of the 15 cent rate near the end of June. The shipments down the Mississippi were only 30,579 bushels. The railroads are not carrying much wheat; it formed 39 per cent. of the total shipments, but only 18 per cent. of the rail shipments. That out of 1,932,611 bushels of wheat shipped from the eight Northwestern markets 1,439,625 bushels (74½ per cent.) should go by lake, while it is yet too early for large receipts from most of the spring-wheat country directly west of the lakes, seems remarkable, especially as the railroads which carried but 20½ per cent. of the wheat carried 24½ per cent. of the corn and more than 97 per cent. of the oats, which latter formed nearly two-thirds of the rail shipments. The explanation probably is that very few shipments were made to the seaboard by rail, and that they are carrying new oats for consumption at Eastern interior points, which is a traffic that lake and canal traffic cannot affect much.

The receipts of the Atlantic ports for the week were smaller than in any corresponding week since 1876, and were 1,173,000 bushels less than last year. They were, however, 251,000 bushels more than in the previous week of this year, and were the largest for three weeks, and with one exception were the largest since June, and with two exceptions were the largest of the year. There was a great change from previous weeks in the distribution among the several Atlantic ports, there being a gain of 50 per cent. at New York, a decrease of 35 per cent. at Philadelphia, and a decrease of 65 per cent. at New Orleans, where the receipts of the previous week were phenomenally large. The total Atlantic wheat receipts were about the same as the week before, there being a gain at New York, but a loss elsewhere.

Exports from Atlantic ports for the week to Aug. 23 for five years have been:

	1880.	1881.	1882.	1883.	1884.
Flour, bbls....	153,329	186,928	193,902	148,137	183,659
Grain, bu....	5,785,130	3,978,597	4,160,893	4,380,590	3,325,380

Total, bu.... 6,475,110 4,540,773 5,042,452 5,027,206 4,151,845

Thus the exports this year were less than in any other of the five—about 18 per cent. less than in 1883 or 1882 and 36 per cent. less than in 1880. The exports, however, were larger than in any previous week of this year, and so far are encouraging, especially as they were made up chiefly of flour and wheat, in which they were considerably greater than last year.

Buffalo grain receipts by lake from the opening to Aug.

31 were as follows, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1884.	1883.	Inc. or Dec.	P. c.
Flour.....	1,295,800	1,261,291	I. 34,509	2.7
Grain.....	26,385,543	25,711,848	D. 6,733,695	26.1
Total bushels.....	32,864,543	42,018,303	D. 9,153,760	21.8
Shipments eastward of grain received by lake for the same period were as follows, in bushels:				
	1884.	1883.	Decrease.	P. c.
By canal.....	10,111,440	24,836,417	5,724,977	23.1
By rail.....	5,564,198	8,131,410	2,567,212	31.6
Total.....	24,675,638	32,967,827	8,292,189	25.2
Per cent. by rail.....	22.5	24.7	2.1	

The canal opened May 7 in both years, making the period of navigation the same. The number of boats cleared from Buffalo up to Aug. 31, was 3,799 this year and 4,248 last, a decrease of 448 boats, or 10.5 per cent.

Coal.

Coal tonnages for the week ending Aug. 23 are reported as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Anthracite.....	776,293	723,042	I. 53,251	7.8
Eastern bituminous.....	193,540	175,149	I. 18,391	10.5
Coke.....	62,822	60,404	I. 2,418	4.0

The anthracite market continues unchanged, with comparatively inactive buying and large stocks reported. It is thought that large buyers are generally holding off in expectation of a break in prices.

Shipments of Clearfield and Cumberland coal to tidewater continue large, both districts showing gains over last year.

The coal tonnage of the Pennsylvania Railroad for the week ending Aug. 23 was:

	Coal.	Coke.	Total.
Line of road.....	140,213	56,835	197,048
From other lines.....	69,304	5,987	69,291
Total.....	209,517	62,822	266,339

The total tonnage this year to Aug. 23 was 8,444,069 tons, against 7,673,218 tons for the corresponding date last year; an increase of 770,851 tons, or 10 per cent.

Actual tonnage passing over the Huntingdon & Broad Top Mountain road for the eight months ending Aug. 30 was:

	1884.	1883.	Inc. or Dec.	P. c.
Broad Top coal.....	125,802	123,344	2,458	2.0
Cumberland coal.....	283,290	227,345	55,945	24.6
Total.....	409,092	350,689	58,403	16.7

The Broad Top coal is mined on the line; the Cumberland is carried through from Mt. Dallas to Huntingdon for the Pennsylvania Railroad.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the eight months ending Aug. 30, was as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Coal Port for shipment.....	65,379	75,716	D. 10,337	13.6
S. Amboy for shipment.....	405,154	440,647	D. 35,493	8.0
Local points on N. J. divs.....	508,116	523,063	D. 14,947	2.8
Co.'s use on N. J. divs.....	121,416	103,627	I. 17,789	17.1
Total.....	1,100,065	1,143,053	D. 42,988	3.7

Of the total this year 922,014 tons were from the Lehigh Region, and 178,051 tons from the Wyoming Region.

Cotton.

Cotton movement for the week ending Aug. 29 is reported as follows, in bales:

	1884.	1883.	Inc. or Dec.	P. c.
Interior Markets.....	3,896	15,043	D. 11,147	74.3
Receipts.....	4,329	15,290	D. 10,961	78.0
Shipments.....	16,342	50,309	D. 33,967	67.8
Exports:				
Receipts.....	4,914	29,971	D. 18,057	78.5
Exports.....	17,078	18,959	D. 1,881	9.9
Stock, Aug. 29.....	124,492	231,540	D. 107,048	46.2

The cotton year closed Aug. 31, and corrected statements for the full year will soon be accessible.

Rates on Live Stock and Dressed Beef.

There has been for some time an effort to increase the east-bound tariff on dressed beef, certain parties urging that the rates on dressed beef were too low in proportion to the tariff on live stock. Commissioner Fink some time ago prepared a recommendation for the adjustment of the difference, but it was not accepted, the Grand Trunk, it is understood, being the chief objector, and the whole matter was referred to a special board of arbitration. Mr. Chas. Francis Adams, Jr., the permanent arbitrator of the Joint Executive Committee, with Messrs. S. W. Allerton and Geo. F. Swift, of Chicago, were named, but they have not decided the question.

Last week Commissioner Fink received a communication from the Erie saying that it had decided to bill cattle from Chicago to New York at \$40 a car-load, or 20 cents per 100 lbs., a reduction of 10 cents, and dressed beef at 32 cents per lb., a reduction of 15 cents. The reason given for this action was that the freight had actually been taken at these rates. The Commissioner issued a circular, not authorizing any general reduction, but stating the facts and authorizing other roads to follow the Erie's example.

Georgia Commission Rates.

At the monthly meeting of the Georgia Railroad Commission last week, the matter of reducing cotton rates on the Savannah, Florida & Western road came up for consideration and the commission decided to change the rates from an allowance of 30 per cent. over the standard rates to 20 per cent. Cotton rates on the Brunswick & Western were changed from an allowance of 15 per cent. from the standard to 10 per cent. This action places all the roads in South-western Georgia on an equality as to cotton rates.

A petition of the Columbus & Rome road to be allowed additional rates was denied, and several other minor matters were passed upon.

Southern Railway & Steamship Association.

The Executive Committee met in Louisville, Sept. 3, pursuant to call. The meeting was held with closed doors, but it is understood that the withdrawal of the East Tennessee road from the pool was discussed. No conclusions were reached and no action taken. The meeting will probably continue for two or three days.

Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior region from the opening up to Aug. 27, are reported by the Marquette Mining Journal as follows, in tons:

	1884.	1883.	Inc. or Dec.	P. c.
From L'Anse.....	48,541	42,305	6,236	14.9
From Marquette.....	806,301	417,885	388,416	45.8
From Escanaba.....	1,040,198	875,783	164,415	18.8
From St. Ignace.....	35,921	19,476	16,445	84.3
Total.....	1,733,961	1,355,549	378,412	27.9

Of the Marquette shipments 475,699 tons came over the Marquette, Houghton & Ontonagon and 133,603 tons over the Marquette & Western. Of the Escanaba shipments 376,078 tons were from the Marquette District, and 664,125 tons from the Menominee District. Besides the lake shipments 17,163 tons of ore were delivered to local furnaces. Shipments of pig iron by lake were 6,276 tons.

Passenger Rates.

The situation in regard to west-bound passenger rates to New York continues much the same as last week. No cutting is going on at the company's office, but the scalpers continue to sell tickets to Chicago and other west-bound points at a considerable reduction, the current rate for first class tickets (New York to Chicago) being given now at from \$14 to \$16. The Pennsylvania Railroad has declined to cut rates in any shape, and will not sell tickets to the scalpers, as the other companies are now doing. There has been no open war, although there are many reports that one is coming. Cutting is also going on in Chicago through the brokers' offices, as in New York.

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—This company's statement for July and the seven months ending July 31 is as follows:

	July.	1883.	Seven months.	1883.
Miles worked.....	2,377	2,219	2,319	2,219
Earnings.....	\$1,301,639	\$1,325,710	\$8,948,454	\$8,694,734
Expenses.....	817,896	557,707	4,928,741	4,108,024
Net earnings.....	\$483,773	\$768,003	\$4,019,713	\$4,496,680

The statement includes the Southern Kansas lines. For the seven months the earnings increased \$253,750, or 2.9 per cent., and the expenses \$780,717, or 17.4 per cent., the result being a decrease of \$476,967, or 10.6 per cent. in net earnings. The expenses this year have been largely increased by the heavy rains and wash-outs on the line in Colorado and New Mexico.

Baltimore & Ohio.—The South Branch Railroad has been completed by this company and was opened for business Sept. 1. The road was partly graded nearly 12 years ago, but for various causes no track was laid upon it. Recently the Baltimore & Ohio agreed to complete and operate the line, and regular trains are now running over it. It extends from Green Spring, 178 miles from Baltimore, southward to Romney, W. Va., a distance of 16 miles. A further extension of the line to Moorfield is proposed to reach some large and valuable deposits of iron ore. The stations on the new branch are Donaldson, Springfield, Grace, Hanging Rock and Romney.

Boston & Lowell.—In the Dow suit to set aside the lease of the Northern Railroad to this company, the New Hampshire Supreme Court has denied the petition of plaintiffs for the appointment of a receiver for the Northern road, holding that the order already made by the Court directing the Boston & Lowell to keep separate accounts and prohibiting any removal of the property of the leased road was sufficient to protect the interests of the plaintiff pending further proceedings of the suit.

Camden & Atlantic.—The extension of the South Atlantic branch of this road is now completed to Long Point, N. J., two miles beyond the late terminus at South Atlantic, and the new line is open for business.

Central Iowa.—It will be remembered that at a meeting of the stockholders of this company held in Marshalltown, Ia., June 4, a board of directors was elected which substantially continued the old management of the company. Subsequently a suit was begun to set aside this election on the ground that these electors had been chosen at a meeting at which a majority of stockholders had been prevented by fraud from attending, and another meeting was held, at which a majority of the stock was voted, and a new board was chosen. At this last meeting the stockholders represented also declared that the action taken at the preceding meeting approving certain contracts was fraudulent and void. A suit has since been begun to set aside some of the contracts named. In the complaint it is charged that these contracts were made with a corporation known as the Connecticut Construction Co., in which nearly all the directors of the railroad company were stockholders. It is charged, therefore, that the agreements, and especially a certain contract made for fencing the road, were fraudulent, being made by the directors and especially by Messrs. Sully, Sage, Phelps and Hanna for their own individual benefit and in order to defraud the company. Under this complaint the New York Supreme Court has granted a temporary injunction restraining the defendants from disposing of certain securities of the Central Iowa Co., amounting at par to nearly \$500,000, which they had received under the contract in payment for the work done or supposed to be done. Further hearings are to be had in the case.

Central Pacific.—This company has made a contract to sell to Taity & Phillips, a large live stock firm, about 212,000 acres of land in Utah, including nearly all the company's lands in that territory. The price is said to be about \$1 an acre.

Denver & Rio Grande.—The English holders of this company's bonds have appointed Messrs. Parrish and Pothonier to proceed to New York and confer with the American bondholders with a view to arranging for a reorganization of the company. The Scotch bondholders have selected Mr. Fleming to represent them and the Amsterdam bondholders will send over Mr. T. C. A. M. Van Weel.

Eastern.—The following statement is published of the earnings of this road for July and the ten months of the fiscal year from Oct. 1 to July 31:

	July.	1883.	Ten months.	1883.
Earnings.....	\$346,287	\$334,728	\$2,818,393	\$2,816,111
Expenses.....	185,375	192,002	1,877,817	1,861,108
Net earnings.....	\$160,910	\$142,726	\$940,576	\$955,003
Interest and rentals.....			895,047	897,378
Surplus.....			\$45,529	\$57,725

The published statement says: "As the very best months of the year for this road—August and September—are not included in the above, there is every reason to believe that the surplus over fixed charges at the close of business, Sept. 30, will be nearly as large as last year. The slight falling off for the 10 months occurred in the earlier part of the season, and the net earnings for July showed a very handsome gain."

The falling-off in the comparisons in the early part of the year was due in some measure to diminished earnings on through Western freight, but more largely to a reduced passenger tariff. Salem was but one of several stations between which and Boston a material reduction of fares was granted, and though the train service of the company has been increased during the same time and the operating expenses for the 10 months show some enlargement as above, yet the cost per ton per mile during the 10 months has been reduced from 84.96 cents in 1883 to 84.20 cents in 1884. Four new locomotives have also been charged in operating expenses, and quite a number of new locomotives and passenger cars are being put into the equipment account, now that a locomotive can be bought for \$7,000 or less, against \$12,000 or \$13,000 last year."

Fargo Southern.—Regular passenger trains now run

over this road between Fargo, Dak., and Ortonville, Minn., making close connections with the Chicago, Milwaukee & St. Paul at Ortonville. Through trains are run over these roads between Fargo and Chicago.

Fremont, Elkhorn & Missouri Valley.—It is announced that this road (which is owned by the Chicago & Northwestern Co.) will from Sept. 1, 1884, be operated under its own organization, the lease to the Sioux City & Pacific Co. having been terminated by mutual consent July 31. During the month of August the former lessee continued to operate the line, but on account of the company owning it. From Sept. 1, therefore, the Fremont, Elkhorn & Missouri Valley Co. will operate its own road, including the main line from Fremont, Neb., to Valentine, 269 miles, with the branch from Norfolk Junction to Creighton, 42 miles. The company will also, by arrangement, run its through passenger and freight trains over the Sioux City & Pacific track from Fremont to Missouri Valley, Ia., making connection with the Chicago & Northwestern Railroad at that point. The general office of the company will be at Norfolk Junction, Nebraska.

Kansas City, Fort Scott & Gulf.—This company issued the following circular under date of Aug. 28:

"It is proposed in the interest of the Kansas City, Fort Scott & Gulf Railroad Co. that a branch line shall be built of about 151 miles, from its main line about 28 miles south of Kansas City (or it may be that by the control of an existing road, by purchase or otherwise, the point of departure from the main line may be established a few miles further north); in either event extending southeasterly through Cass County in Missouri to and through the coal fields of Henry County, and thence southerly through St. Clair, Polk and Greene counties to a point about 30 miles west of Springfield, on the line of the Fort Scott, Southeastern & Memphis Railroad. * * *

"For the purpose of building the new road, parties are to organize two corporations, under the laws of Kansas and Missouri respectively, to be ultimately consolidated into a single corporation to be known as the Kansas City, Clinton & Springfield Railroad Co. The undersigned is authorized to offer the subscription to the securities of the new company to the stockholders of the Kansas City, Fort Scott & Gulf Railroad Co., upon the following terms:

"Each holder of 25 shares of common stock or of contracts for preferred stock of the Kansas City, Fort Scott & Gulf Railroad Co., of record Sept. 4, 1884, at 3 o'clock p. m., is entitled to subscribe to one block of the securities of the Kansas City, Clinton & Springfield Railroad Co., consisting of:

6 shares of capital stock at par.....\$600
\$1,000 5 per cent. 40-year gold bond at 25 per cent.....250

Total.....\$850

"It is understood and agreed, however, between the Kansas City, Fort Scott & Gulf Railroad Co., and the subscribers to the securities of the Kansas City, Clinton & Springfield Railroad Co.—and it is one of the terms of the subscription—that the Kansas City, Fort Scott & Gulf Railroad Co. is to guarantee the payment of the principal and interest of the bonds of the Kansas City, Clinton & Springfield Railroad Co., and the subscribers to the stock of the latter company, in consideration of said guarantee, are to transfer to the Kansas City, Fort Scott & Gulf Railroad Co., one half of the shares subscribed and paid for as above, so that each subscriber to a block will obtain for the sum of \$850, three shares of capital stock, \$1,000 5 per cent. 40-year gold bond, guaranteed, principal and interest, by the Kansas City, Fort Scott & Gulf Railroad Co.; and the result of the arrangement will be that one half of the stock of the new company will be held by the subscribers, and one half by the Kansas City, Fort Scott & Gulf Railroad Co. The bonds will not exceed \$20,000 per mile, and will be secured by a first mortgage of the entire property of the new corporation. Subscriptions will be received until Sept. 18, 1884, at 3 o'clock, and will be payable, 10 per cent. Oct. 1, 1884, and the balance as called for by the treasurer upon at least 10 days notice, but not exceeding 25 per cent. in any one month."

Louisville & Nashville.—It is stated that the plan for relieving this company from its present difficulties has been completed, but it has not yet been made public. It is understood, however, that it is in substance as follows: There will be issued \$5,000,000 of new 6 per cent. 10-40 bonds secured by a general mortgage upon all the property of the company including its interest in the leased and controlled lines. There will also be issued \$5,000,000 of preferred stock bearing 5 per cent. dividends, non-cumulative, and the \$5,000,000 of unissued common stock in the treasury will be canceled. The new bonds and preferred stock will be offered to the stockholders of the company about Sept. 20, on terms to be hereafter published.

Work is now progressing well on the bridge over the Ohio River at Henderson, Ky., which will connect the two sections of the St. Louis Division, which have heretofore been dependent upon ferry transfer. Seven of the foundations for the piers have been completed and work is being done upon all the rest, eight in number. Three of the piers are substantially completed and the two large piers for the channel span will be finished during the present month. The false works for the first iron span of the bridge are up and it is expected that two of the spans will be in place before October. The bridge will be 3,688 ft. long, with a trestle approach on the Indiana side of nearly three miles. The channel span will be 525 ft. long and 50 ft. above extreme high water. Work is also in progress on the nine miles of connecting railroad extending from Evansville to the Indiana end of the bridge.

Manchester & Keene.—In the case of Bruce and others against this company, in which the United States Circuit Court dismissed the suit of plaintiffs to set aside the foreclosure sale of the road, an appeal has been taken to the United States Supreme Court, and the papers are now being made up.

Mexican Railroad Notes.—The following notes are from the Mexican Financier of Aug. 23:

The term having expired for beginning work on the proposed railroad from the coal-fields on the River Yaqui to El Morito, a point on the Bay of Guaymas, the concession granted Robert R. Symon in the year 1880, has accordingly been declared void.

The *Voz de Mexico* states that the two commissioners, who recently arrived from London to inspect the Vera Cruz Railroad, were sent for the purpose of instituting still greater economy in the management of that road, although it is well known that expenses have been already immensely reduced since the severe blow to their traffic, caused by the close of construction on the Central and the National railroads.

El Obrero, of Pachuca, recommends an extension of the Hidalgo Railroad towards the west and curving so as to reach Actopan and Ixmiquilpan, claiming that it would be profitable to the company and of great benefit to the state, on account of the large quantities of grain and minerals produced in those two districts over and above that needed for their own consumption. El Obrero estimates an annual movement of 50,000 tons of freight annually from the districts mentioned.

Situated as the Sonora Railroad is in the bed of valleys, the tracks and the terraces on which these are situated are in danger of being washed away. So the company is at great expense opening deep ditches at the sides of the track to run the rain water into the several culverts. The ditches are 3 ft. wide and 2,520 cubic metres have already been opened, 1,542 between Moreno and Torres, 607 between Torres and Millard and 308 between Pesvueria and Carbo. Between Moreno and Millard 393 cars of stone have been used in terracing. In the Ortiz well water has been found at a depth of 68 meters. Work is suspended on the Batamot bridge.

Milwaukee, Lake Shore & Western.—Work on the new extension is progressing rapidly. The track is laid from Gogebic, Mich., westward to Wakefield, 30 miles, and a regular train is now run to the new terminus. West of Wakefield a large force is employed, while a considerable force is also at work on the Ashland end of the road.

The company has had a considerable summer travel this year from sportsmen and tourists. The hotel built by the company at Lake Gogebic has proved very successful and has been well filled during the season, while of course adding considerably to the passenger travel.

Minneapolis & St. Louis.—A contract has been let to R. B. Langdon & Co. for the grading of an extension of this company's Canon Valley Division, from the present terminus at Waterville, Minn., westward 18 miles, which will make the terminus on the Minnesota River near Mankato. The grading is to be completed by Nov. 1 next.

Missouri Pacific.—The Lebanon Branch is now completed to Bagnell, Mo., five miles southward from the late terminus at Cooper, and 45 miles from the main line at Jefferson City. The extension has been opened for business.

Morgan's Louisiana & Texas.—The Cypermort Branch of this road has been completed and opened for business. It extends from Baldwin, La., on the main line, to Cypermort, a distance of 15 miles. It runs along Bayou Teche, reaching a number of large plantations.

Newfoundland.—An application has been made in the New Jersey Court of Chancery to dissolve the Newfoundland Railroad Construction Co., which was organized under the laws of New Jersey, and a counter-application has been made by certain parties to restrain the company from such action. The Newfoundland Railway Co. was organized some three years ago to build a railroad on the Island of Newfoundland, under a charter granted by the Colonial Government by which the company received a large land grant and an annual subsidy, and let a contract to the Newfoundland Railroad Construction Co., which was to receive the securities of the railroad company in payment. The applicants for the injunction against the dissolution of the construction company charge that its managers have received a considerable amount of the capital stock and first mortgage bonds of the railroad company with 500,000 acres of land, and \$280,000 in cash subsidy, for which no accounting has been made.

New York, Lake Erie & Western.—This company's statements, as submitted to the Railroad Commissioners for the quarter ending June 30, 1884, makes the following showing:

Gross earnings	\$4,912,365
Operating expenses	3,863,256
Net earnings	\$1,049,109
Income from other sources	439,902
Gross income	\$1,489,071
Interest on funded debt	\$1,151,348
Guaranteed interest other than interest on bonds of company	81,340
Taxes	26,968
Rentals of leased lines	180,193
Interest on equipment loans and mortgages	146,193
Expenses of ferries, horse railroad, baggage express and other charges	188,434
Taxes on property used in operation of road	10,317
Deficit	1,800,015

The statement includes the entire net earnings of the leased New York, Pennsylvania & Ohio road.

As considerable interest is felt in the company's financial condition just now, the balance sheet of June 30, as appended to the statement, is given in full, as follows:

Liabilities:	
Capital stock, common	\$7,150,000
" preferred	8,124,800
Funded debt	75,267,136
Loans and bills payable	1,796,509
Sinking fund reorganization, first lien bonds	100,000
Interest funded debt due and accrued	1,950,733
Traffic balances	949,760
Rentals leased lines	728,249
Dividends unpaid	9,258
Due for wages, supplies, etc.	3,846,087
Assessments on Erie common and preferred stock, int-rest, etc.	3,284,451
Sundries	184,604
Profit and loss	5,752,328
Total	\$179,155,615
Assets:	
Road and equipment	\$11,181,703
Construction branch lines	616,058
Stocks and bonds, other companies	3,117,986
Amounts paid account equipment	3,403,562
Due by agents and others	7,429,496
Supplies on hand	1,214,661
Cash on hand and in London	566,655
Bills receivable	150,378
Discount on stocks and bonds	745,839
Commissions and expenses extending N. Y. & E. R. mortgages	218,340
Estate Erie Railway Co.	150,417,637
Total	\$179,155,615

A noticeable item in the assets is the very large amount (\$7,426,496) reported as "due by agents and others" to the company.

Newcastle & Middlesex.—A recent dispatch from Pittsburgh reported an alleged fraudulent attempt to induce English capitalists to invest in the bonds of the company of this name. Advertisements received from London and inserted in English papers offered \$120,000 first-mortgage bonds of this company, giving a list of directors and describing the line of the road, extending from New Castle, Pa., to Middlesex, which is exactly the line adopted by the New Castle & Northern road. A list of directors resident in Pittsburgh and other places was also given. Several of these directors stated that they knew nothing about the company and that their names had been used without authority, and an application at Harrisburg revealed the fact that no charter had been issued to any such company as the New Castle & Middlesex.

Since this publication was made Mr. Thomas B. Simpson, who was contractor for the building of the Newcastle & Northern road, and whose contract was recently set aside by the court, has issued a letter stating that he was responsible for the proposed issue of bonds, and claiming that there was nothing fraudulent about it. Mr. Simpson says that

the company has been actually organized to build the road projected by the New Castle & Northern Co., and that articles of incorporation have been prepared and sent to Harrisburg, but their final execution had been withheld pending an attempt to stay the legal controversy between himself and the Northern Co. He claims that the road will be built and that the money had been asked for in London in good faith.

New York & New England.—The report of this company to the New York Railroad Commission for the quarter to June 30 shows gross earnings of \$832,729, and operating expenses of \$651,555, leaving \$181,174 net. Income from other sources was \$5,502, making the total net \$186,677. The interest and taxes for the quarter were \$270,013, thus showing a deficit of \$83,335.

The Receiver's statement gives the following figures for July and the seven months ending July 31

	July		Seven months	
	1884.	1883.	1884.	1883.
Earnings	\$276,217	\$320,152	\$1,867,712	\$1,985,465
Expenses	221,126	256,073	1,578,438	1,759,069
Net earnings	\$55,091	\$64,079	\$349,274	\$226,396
Per cent. of exps.	80.1	80.0	81.3	88.6

For the seven months the gross earnings show a decrease of \$117,753, or 6 per cent., and the expenses a decrease of \$240,681, or 14 per cent., the result being a gain of \$122,878, or 54 per cent., in net earnings.

New York, Philadelphia & Norfolk.—The track on this road is completed to Pungoteague, Va., 8 miles southward from the late terminus at Accomac, 85 miles from Pocomoke, Md., and 66 miles from Delmar, the northern terminus of the road. Work on the tracklaying is progressing actively from Pungoteague southward toward Cherrystone.

New York, West Shore & Buffalo.—In the New York Supreme Court, Aug. 29, on the application of the Attorney-General, the Court decided that the former appointment of receivers for this road is illegal, holding that the original order of appointment made in Orange County was void, being in contravention of section 1 of the receiver-ship act passed last year, which provides that receivers should only be appointed for a corporation in the judicial district in which the principal office is situated, and that therefore the application should have been made in New York instead of in Orange County. The Court also set aside the claim that if any error lay in the original appointment of the receivers it had been remedied by an appointment of the receivers in New Jersey, holding that the last named appointment only gave them control of the property of the company in that state. On motion of the Attorney-General the Court then granted a new order for the appointment of receivers and selected for that office ex-Judge Horace Russell, who was one of the receivers named in the original order. As to the second receiver the Court reserved action, refusing to reappoint Mr. Houston on the ground that charges had been made against him which, while they would not be sufficient for removing him from a receivership to which he had been properly appointed, would nevertheless be a bar to his selection as receiver under a new appointment. Mr. Houston was Vice-President of the company.

Norfolk & Western.—This company's statement for July and the seven months ending July 31 is as follows:

	July		Seven months	
	1884.	1883.	1884.	1883.
Earnings	\$183,824	\$219,188	\$1,432,327	\$1,428,623
Expenses	109,501	122,216	897,255	829,714
Net earnings	\$76,323	\$96,972	\$535,072	\$598,909
P. ct. of exps.	59	56	63	58

For the seven months this shows an increase in gross earnings of \$3,704, or 0.8 per cent., an increase in expenses of \$67,541, or 8 per cent., and a resulting decrease of \$63,837, or 11 per cent., in net earnings. The New River Division (75 miles) was operated for the whole of this year, but from May 21 only in 1883. The statement says:

"The causes which led to the decrease in gross earnings for the month of June, as compared with the same period of last year, as mentioned in the June statement of earnings and expenses, prevailed also during the month of July.

"The result of the means adopted for the reduction of expenses is shown above, and will be correspondingly apparent during the succeeding months of the year.

"Although the movement of the large crops of the present year is still impeded by the low prices at present prevailing, the volume of business for the current month compares favorably with that of the same period of last year, as is shown by the reports of estimated earnings so far as received."

Pine Bluff & Swan Lake.—The grading of this road is now nearly completed from Pine Bluff, Ark., to Swan Lake, a distance of 14 miles, and tracklaying has been begun. It will be a branch of the Texas & St. Louis road.

Port Rowan & Lake Shore.—Sealed proposals will be received until Sept. 15 at the office of William E. Soare, Chief Engineer of this road, at Port Dover, Ont., for the grading of this projected road. The work will be divided into two sections, which will be let either separately or together. The plans and specifications may be seen at the office of the Chief Engineer as above.

Richmond & Alleghany.—Mr. Thomas J. Evans, having been appointed by the Court special master to take account of the indebtedness of this company and also of the value of its property, gives notice that he has fixed on Friday, Oct. 10, at noon, as the time, and his office in Richmond, Va., as the place, to take the accounts and make the inquiries directed by the Court. All creditors of the company are required to appear before the master at the time and place mentioned and to prove their claims; otherwise they will be debarred from all benefit under the decree of the court.

Rochester & Pittsburg.—This company's statement to the New York Railroad Commission for the quarter ending June 30 is as follows:

Gross earnings	\$277,078
Expenses	205,430
Net earnings	\$72,248
Interest and rentals	199,060
Deficit for the quarter	\$126,812

The bonded debt on June 30 amounted to \$10,654,803, and the floating debt to \$1,235,772, including coupons due and unpaid.

Rome, Watertown & Ogdensburg.—This company makes the following statement for the nine months of its fiscal year from Oct. 1 to June 30:

Earnings	\$1,200,124
Expenses	832,722
Net earnings	\$367,402

The working expenses were 67 per cent., against 83 per cent. last year. The floating debt has been reduced over one-half from last year's figures. Of the 14,950 tons of steel

rails bought all but 1,000 tons have been laid. The passenger business is excellent and the prospects for fall fruit business is encouraging.

The statement to the Railroad Commission for the quarter ending June 30 shows earnings of \$411,926 gross and \$152,757 net, which was increased to \$161,262 by income from other sources. The interest, taxes and rentals were \$192,215, leaving a deficit of \$30,953 for the quarter.

Sioux City & Pacific.—This company, as noted elsewhere, ceases to operate the Fremont, Elkhorn & Missouri Valley Railroad from Sept. 1, the lease of that road having been terminated by agreement. The Sioux City & Pacific Co. will continue to operate its own lines between Missouri Valley and Fremont, Neb., and also between Sioux City, Ia., and Missouri Valley. The separate organization of this road will be continued, although it is now owned by the Chicago & Northwestern Company.

St. Louis & Cairo.—It has recently been discovered that an organized conspiracy existed for defrauding this company, the parties engaged in it being certain freight agents and freight conductors on the line. It is said that an arrangement was made by which the agents who shipped freight from certain stations, having already an understanding with the conductor and the agent at the station to which the freight was shipped, by which the freight was transported, delivered, and the charges collected and no report of the same made to the company's Auditor, and the amount which is thus collected being divided between the parties to the conspiracy. This was discovered accidentally, attention having been drawn to the fact that certain agents were living in a style which was not warranted by their salaries. The matter is now being investigated, but it will be difficult to ascertain just how much the company has lost in this way. The amount is supposed to be somewhere between \$30,000 and \$40,000.

South Pennsylvania.—At the Quemahoning Tunnel on this road work is progressing actively on the approaches, but nothing has been yet done on the tunnel itself, and it is thought that the approaches, both of which require very deep cuttings, will hardly be finished for two months yet. At the Allegheny Tunnel steady progress is being made, the headings being now about 300 ft. in. At the Sideling Hill and the Rose Hill tunnels the headings are fairly in and good progress is being made. A good deal of work is being done at other points, the grading on several sub-divisions being well advanced. A contract for 12 miles of grading from the Laurel Run Tunnel westward was recently let to David Page & Co. From the rate of progress now being made it is doubtful whether the tunnels will be finished this year, and of course the completion of the rest of the road depends largely upon those works.

St. Johnsbury & Lake Champlain.—The Eastern Advertiser of Sept. 2 says: "This road is now almost wholly owned by three men—Mr. A. B. Harris of Springfield, who has become its President, Colonel A. B. Jewett of St. Johnsbury, who is its Manager and was its earliest and most untiring promoter, and Mr. H. T. Folsom of Lyndonville, who is Superintendent of the Passumpsic Road."

St. Louis, Hannibal & Keokuk.—On Sept. 15 this company will begin to run through passenger trains between Hannibal, Mo., and St. Louis. The road has for sometime connected with the Wabash, St. Louis & Pacific, but no through trains have been run. Arrangements have now been made for the use of through cars over the Wabash track for 40 miles.

St. Paul, Minneapolis & Manitoba.—A new branch has been completed and opened for business from Larimore, Dak., northwest to Park River, 36½ miles. It is to be extended to Kensington, and will be worked as a branch of the Northern Division.

Spartanburg, Union & Columbia.—The Columbia & Greenville Co., pursuant to notice previously given, surrendered its lease of this road on Sept. 1. The owners of the road, however, have not consented to the canceling of the lease and a suit will probably be begun to enforce its provisions.

Tionesta Valley.—This company has leased the Garfield & Cherry Grove Railroad, which extends from Sheffield, Pa., to Garfield, 13 miles, and will hereafter operate that road.

Utah Central.—Work has been begun on a branch extending from this road at Milford, Utah, to the Cave Mine, in Beaver County, a distance of eight miles.

Union Pacific.—This company is now laying a second track between Omaha and Papillion, Neb., 15 miles. Papillion is the junction with the Omaha Division of the Missouri Pacific, and the second track is intended to accommodate that road.

It is reported that plans are under discussion for funding this company's floating debt. It is said that these plans include the sale of the Central Branch road to the Missouri Pacific Co. The Central Branch is naturally a connection of the Missouri Pacific, and indeed has for some time been operated by that company on account of the Union Pacific. It is also said that an attempt will be made to sell the St. Joseph & Western first-mortgage bonds now held by the company, and possibly some other securities.

Wabash, St. Louis & Pacific.—This company recently made arrangements to run the cars of the Mann Boudoir Car Co. on its line between Chicago and St. Louis and between St. Louis and Kansas City. The Pullman Palace Car Co., however, has obtained an injunction to prevent the running of these cars between St. Louis & Kansas City on the ground that it holds an exclusive contract for running sleeping cars on that line. The injunction is temporary and to continue until further hearing in the case.

Wadena & Park Rapids.—This company has been organized to build a railroad from Wadena, Minn., on the Northern Pacific to Park Rapids. Grading is to be begun on the road at once, it is said.

West Jersey.—This company's statement for July and the seven months ending July 31 is as follows:

	July		Seven months	
	1884.	1883.	1884.	1883.
Earnings	\$178,532	\$178,147	\$706,042	\$650,005
Expenses	98,417	88,028	440,713	404,011
Net earnings	\$80,115	\$90,119	\$265,329	\$251,994
Per cent. of expenses	55.1	49.8	62.4	61.6

For the seven months the gross earnings increased \$50,037, or 7.6 per cent., while the expenses increased \$36,702, or 9.1 per cent., the result being an increase of \$13,335, or 6.3 per cent. in net earnings.

Western Maryland.—This company has completed the grading of a short spur or cut-off, running from its line just east of Hagerstown, Md., southwest to a connection with the Shenandoah Valley Railroad at a point a mile south of Hagerstown. This connecting track is about 1½ miles long, and is intended to transfer freight between the two roads. Track is now being laid upon it.